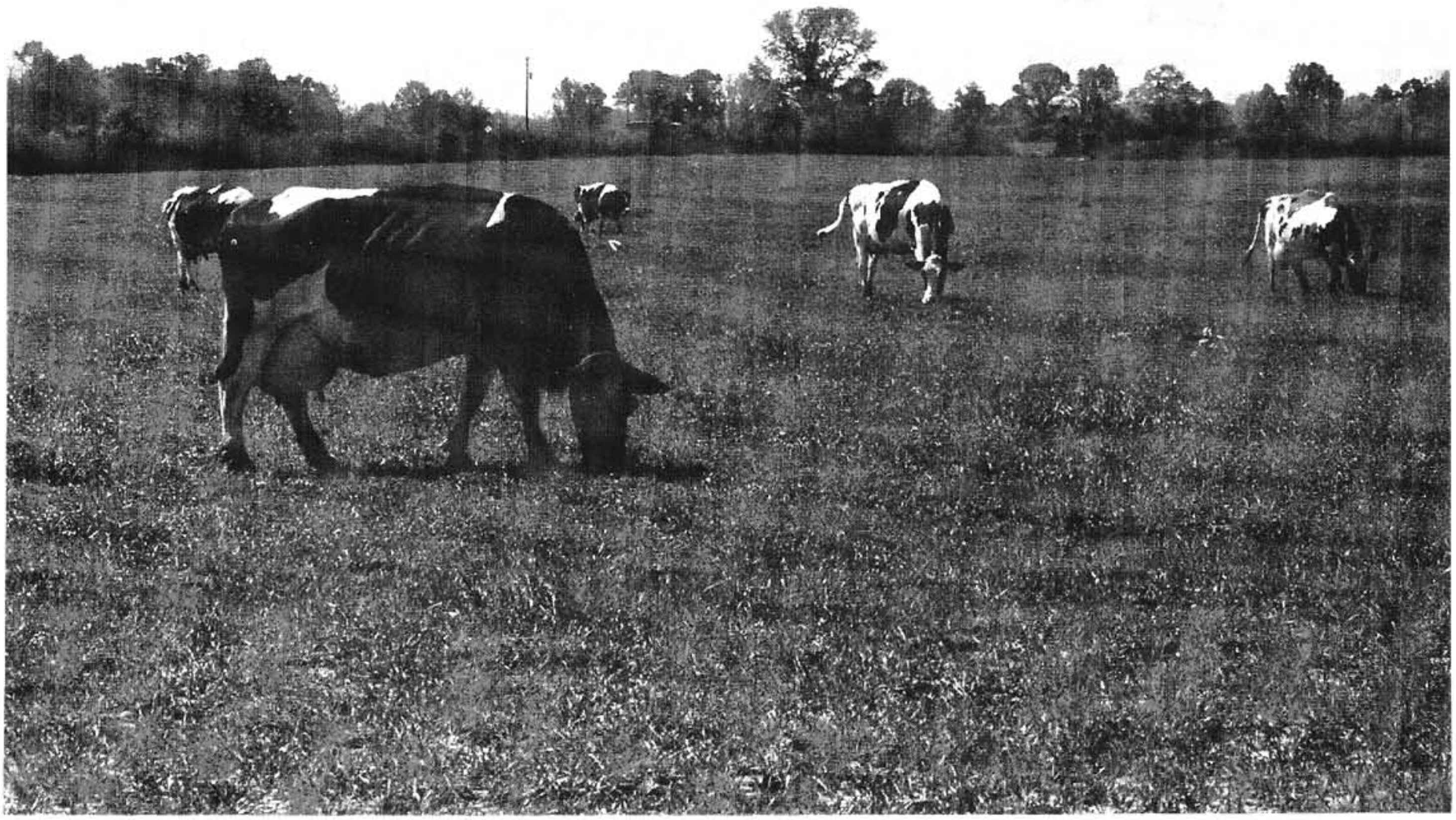
United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Louisiana Agricultural
Experiment Station,
Louisiana Soil and Water
Conservation Committee,
and the Bogue Chitto-
Pearl River Soil and Water
Conservation District

Soil Survey of Washington Parish, Louisiana



How To Use This Soil Survey

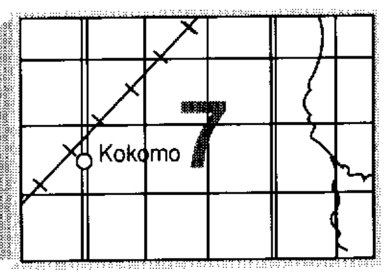
General Soil Map

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.

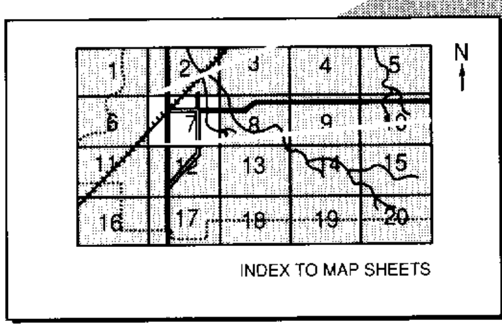
Detailed Soil Maps

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



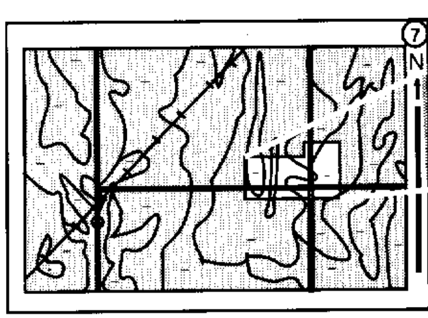
MAP SHEET

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.

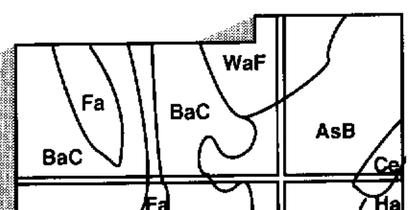


INDEX TO MAP SHEETS

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.



MAP SHEET



AREA OF INTEREST

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 1988. Soil names and descriptions were approved in 1989. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1989. 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 Bogue Chitto-Pearl River 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: Cows grazing ryegrass in an area of Cahaba fine sandy loam, 1 to 5 percent slopes. Dairy farming is an important enterprise in Washington Parish.

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Summary of Tables

Foreword

This soil survey contains information that can be used in land-planning programs in Washington 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 Washington Parish, Louisiana

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

WASHINGTON PARISH is in the southeastern part of Louisiana (fig. 1). It has a total area of 432,455 acres. It is bordered by Pike, Walthall, and Marion Counties, Mississippi, on the north; St. Tammany Parish on the south; Pearl River County, Mississippi, on the east; and Tangipahoa Parish on the west. According to the 1980 census, the population of the parish was 44,207. Franklinton is the parish seat, and Bogalusa is the largest city in the parish. The parish is mainly rural. The land is used primarily for woodland and agriculture. Trends have indicated no significant change in land use in the parish.

The parish is made up of three general areas—the sloping uplands, the level to gently sloping terraces, and the nearly level flood plains. All of these areas are used mainly for commercial woodland and for pasture. The elevation ranges from about 350 feet above sea level in the uplands to 50 feet above sea level on the flood plains.

The descriptions and names of soils in this survey do not fully agree with those on soil maps for the adjacent parishes in Louisiana or counties in Mississippi. The differences are the result of better information about the soils, modifications in series concepts, the intensity of mapping, or the extent of soils within the survey.

This survey updates the soil survey of Washington Parish that was published in 1925 *(61)*.

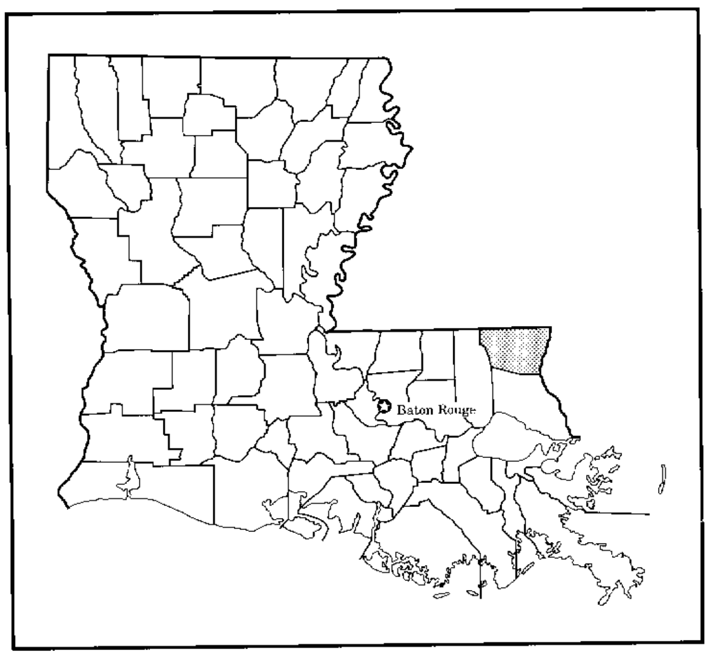

Figure 1.—Location of Washington Parish in Louisiana.

General Nature of the Survey Area

This section gives general information about Washington Parish. It describes climate, agriculture, history, transportation, and water resources.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

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 64 inches. Of this, 34 inches, or 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, and most occur in summer.

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

Washington Parish is principally forested. The economy of the parish depends mainly on the production of timber and timber products, but agriculture is another important source of income. In 1985, about 67 percent of the parish was used as woodland. The remaining land was mainly cropland, pasture, and areas of wetlands. The principal crops in the parish are corn, soybeans, and wheat. Truck and garden crops also are important.

According to the 1985 annual report of the Washington Industrial Development Foundation, 289,000 acres in Washington Parish was woodland. In 1985, the local office of the Agriculture Stabilization and Conservation Service reported 215 dairies and 75,000 acres of pasture in Washington Parish. Corn was planted on 8,000 acres, soybeans on 3,500 acres, and wheat on 2,000 acres. Other crops grown in the parish include grain sorghum and oats *(34)*.

History

Washington Parish was named in honor of the first president of the United States. It is in part of Louisiana that historically was called the Florida Parishes *(17)*. In 1810, the area of land making up the Florida Parishes belonged to Spain and was not a part of Louisiana. At that time, the inhabitants were mainly English and American, although Indians were the first inhabitants in the area. In late 1810 and 1811, the residents in the Florida Parishes revolted against the Spanish rulers. Subsequently, the area became a part of the United States.

In 1812, Louisiana became a state. The Florida Parishes, however, did not become a part of Louisiana until several months later. St. Tammany Parish was carved out of the Florida Parishes region. It included what is now Washington Parish and part of Tangipahoa Parish. In 1819, Washington Parish was created from the northern part of St. Tammany Parish. Franklinton became the parish seat *(17)*. Parish government was organized on March 6, 1819. The parish had only one city and one town, and it was divided into nine wards. It has a police-jury type of government.

The economic development of Washington Parish was slow until the period from 1819 to 1906, when enterprising lumbermen began to utilize its extensive forests. In 1908, the largest yellow pine sawmill in the world, founded by the Goodyears of New York, began operations in the parish. Presently, the site is occupied by a major company that makes paper, boxes, bags, and other paper products.

Presently, Washington Parish excels in the production of lumber and other wood products. It has been recognized for success in reforestation and in the overall management of timber resources *(66)*.

Transportation

The roads in Washington Parish are mostly hard-surfaced state and parish highways, although a number of parish gravel roads are in the area. Louisiana Highway 25 extends from the north to the south through Franklinton, and Louisiana Highway 21 extends from the north to the south through Bogalusa. Louisiana Highway 16 serves the southern part of the parish.

The parish is served by a north-south main line of Illinois Central Gulf Railroad. Two bus lines and several motor freight carriers also serve Washington Parish. The Carr Memorial Airport near Bogalusa and the

Franklinton Airport provide service for small private and commercial aircraft.

The Pearl River is navigable, and it connects Bogalusa with the Mississippi River, the Intracoastal Waterway, and other waterways throughout the country *(35)*.

Water Resources

The principal sources of surface water in Washington Parish are the Pearl River, which has an average width of 300 feet, and the Bogue Chitto River, which has an average width of 180 feet. The Pushepetapa, Lawrance, Bogue Lusa, Silver, and Hays Creeks and the Tchefuncte River are the remaining water bodies in the parish. The Tchefuncte River forms the boundary between Washington and Tangipahoa Parishes. No major lakes are in the parish *(35)*.

Washington Parish is underlain by strata of Pleistocene and Tertiary clay, sand, and gravel. Throughout the parish, sand and gravel beds yield an abundant supply of soft water. In the northern part of the parish and the higher areas, the water from the sands is artesian in nature but is not under sufficient pressure to flow to the surface. In the southern part of the parish and the lower areas, artesian water from sands below a depth of 300 feet flows to the surface. In Bogalusa, large-diameter wells, about 600 to 750 feet deep, yield an artesion flow that averages 500 to 1,000 gallons per minute. Most of the wells provide soft, bicarbonate water. However, the water from a few of the deeper wells has a high content of iron *(35)*.

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, drainage, and other characteristics that affect management.

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

Each map unit is rated for *cultivated crops, pasture, woodland, urban uses,* and *recreational areas.* Cultivated crops are those grown extensively in the survey area. Pasture refers to land that produces either native grasses or tame grasses and legumes for livestock grazing. 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.

The boundaries of the general soil map units in Washington Parish match those of the previously completed soil surveys of St. Tammany and Tangipahoa Parishes and Marion, Pike, and Walthill Counties, Mississippi. In a few places, however, the names of the map units differ because of differences in map unit design and changes in soil patterns near the survey area boundary.

Soil Descriptions

The general soil map units in this survey area have been grouped based upon three general landscapes. The description of the broad group and the map units in the group follow the group name. The texture provided in the group description refers to the texture of the surface layer of the major soils.

Soils on Uplands

This group of map units consists of well drained and moderately well drained, very gently sloping to moderately steep, loamy soils on uplands. The two map units in this group make up about 63 percent of the land area in Washington Parish. Most of the acreage is woodland. A small acreage used as pasture or cropland. The slope is the main limitation affecting most uses.

1. Ruston-Smithdale

Very gently sloping to moderately steep, well drained soils that are loamy throughout

This map unit consists of very gently sloping to moderately sloping soils on ridgetops and moderately sloping to moderately steep soils on side slopes in the uplands. The soils are located at the highest elevations in the parish. Narrow streams and drainageways are throughout the map unit. Slopes range from 1 to 20 percent.

This map unit makes up about 26 percent of the land area in the parish. It is about 45 percent Ruston soils, 41 percent Smithdale soils, and 14 percent soils of minor extent.

Ruston soils are very gently sloping to moderately sloping and are on ridgetops and side slopes. They have a surface layer of dark grayish brown or dark brown fine sandy loam. The subsurface layer is yellowish brown sandy loam. The subsoil is yellowish red sandy loam in the upper part, yellowish red and yellowish brown sandy loam in the next part, and red sandy loam in the lower part.

Smithdale soils are strongly sloping and moderately steep and are on side slopes. They have a surface layer of dark brown or dark grayish brown fine sandy loam. The subsurface layer is yellowish brown sandy loam. The subsoil is red sandy clay loam in the upper and middle parts, and it is yellowish red sandy loam in the lower part.

Of minor extent in this map unit are Angie, Arkabutla, Bassfield, Bibb, Cahaba, Fluker, Jena, Ouachita, Savannah, and Tangi soils. The moderately well drained Angie, Savannah, and Tangi soils have slopes that are less convex than those of the Ruston soils and are not as steep as those of the Smithdale soils. Arkabutla, Bibb, Jena, and Ouachita soils are on the flood plains of narrow streams and drainageways. Bassfield, Cahaba, and Fluker soils are on stream terraces. Fluker soils are also in depressions on uplands.

Most of the acreage is used as pine woodland. A small acreage is used as pasture, cropland, or as sites for homes.

The soils in this map unit are well suited to woodland. They have few limitations for this use. The slope is a limitation only in areas of moderately steep soils.

Ruston soils are well suited to pasture and are moderately well suited to crops. Smithdale soils are poorly suited or are not suited to crops. They are moderately well suited to pasture. The slope is the main limitation. Low fertility and the potential aluminum toxicity are additional limitations.

The soils in this map unit are mainly well suited to urban uses, although areas of moderately steep soils are poorly suited. Ruston soils are well suited to intensive recreational areas, and Smithdale soils are moderately well suited or poorly suited. The slope, the moderate permeability, and the low strength on sites for roads and streets are the main limitations.

The soils in this map unit are mainly well suited as habitat for woodland wildlife and openland wildlife. Areas of moderately steep soils are only moderately well suited as habitat for openland wildlife.

2. Savannah-Ruston-Tangi

Very gently sloping to moderately sloping, moderately well drained and well drained soils that are loamy throughout or have a loamy surface layer and a loamy and clayey subsoil

This map unit consists of soils on ridgetops and side slopes in the uplands. Small streams and drainageways are throughout the map unit. Slopes range from 1 to 8 percent.

This map unit makes up about 37 percent of the land area in the parish. It is about 70 percent Savannah soils, 20 percent Ruston soils, 3.5 percent Tangi soils, and 6.5 percent soils of minor extent.

Savannah soils are moderately well drained. They have a surface layer of dark grayish brown fine sandy loam. The subsurface layer is pale brown fine sandy loam. The subsoil is yellowish brown, mottled clay loam in the upper part. The lower part is a fragipan. It is mottled in shades of brown, yellow, and red throughout. It is clay loam in the upper part and sandy clay loam in the lower part.

Ruston soils are well drained. They have a surface layer of dark grayish brown or dark brown fine sandy loam. The subsurface layer is yellowish brown sandy loam. The subsoil is yellowish red loam and sandy loam in the upper part, yellowish red and yellowish brown sandy loam in the next part, and red sandy loam in the lower part.

Tangi soils are moderately well drained. They have a surface layer of dark gray or dark grayish brown silt loam. The subsoil is yellowish brown silt loam and yellowish brown, mottled silt loam in the upper part. The lower part is a fragipan. It is yellowish brown, mottled silty clay loam in the upper part and strong brown, mottled clay in the lower part.

Of minor extent are Angie, Arkabutla, Bassfield, Bibb, Cahaba, Fluker, Jena, Ouachita, and Smithdale soils. Angie soils are in landscape positions similar to those of the Tangi soils. Arkabutla, Bibb, Jena, and Ouachita soils are on narrow flood plains. Bassfield, Cahaba, and Fluker soils are on stream terraces. Fluker soils are also in depressions on uplands. Smithdale soils are on strongly sloping to moderately steep side slopes.

Most of the acreage is used as pasture or woodland. A small acreage is used as cropland or as sites for homes.

Savannah soils are moderately well suited to woodland, and Ruston and Tangi soils are well suited. The seasonal wetness limits the use of equipment and increases the hazard of soil compaction in areas where heavy equipment is used. The competition from understory plants is a management concern for foresters. Also, the rooting depth is limited by a fragipan in Savannah and Tangi soils.

The soils in this map unit are mainly well suited to pasture and moderately well suited to crops. The slope, low fertility, and the potential aluminum toxicity are the main limitations for these uses. The restricted rooting depth is an additional limitation.

These soils are mainly moderately well suited to urban uses and intensive recreational areas. Ruston soils are well suited to intensive recreational areas. The main limitations are the wetness; the moderately slow, moderate, or very slow permeability; the moderate shrink-swell potential; and the low strength on sites for roads and streets.

Soils on Terraces

This group of map units consists of well drained to poorly drained, level to gently sloping, loamy soils on broad stream or marine terraces. The two map units in this group make up about 18 percent of the land area in Washington Parish. Most of the acreage is used as woodland. A small acreage is used as pasture or cropland. The wetness and flooding are the main limitations.

3. Myatt-Stough-Prentiss

Level and very gently sloping, poorly drained, somewhat poorly drained, and moderately well drained soils that are loamy throughout

This map unit consists of soils on broad stream or marine terraces along the Bogue Chitto and Pearl Rivers. The landscape made up of broad flats, depressional areas, low ridges, and numerous small drainageways. Most areas of Myatt soils are subject to rare flooding. Areas of Myatt soils in depressions and drainageways are frequently flooded. Slopes range from 0 to 3 percent.

This map unit makes up about 9 percent of the land area in the parish. It is about 50 percent Myatt soils, 32 percent Stough soils, 15 percent Prentiss soils, and 3 percent soils of minor extent.

The level, poorly drained Myatt soils are on broad flats and in depressions and drainageways. They have a surface layer of dark gray fine sandy loam and a subsurface layer of gray, mottled fine sandy loam. The subsoil is gray, mottled sandy loam in the upper part and mottled light brownish gray, yellowish brown, and strong brown sandy clay loam in the lower part. The substratum is gray sandy clay loam.

The level, somewhat poorly drained Stough soils are on broad flats. They are slightly higher on the landscape than the Myatt soils. Stough soils have a surface layer of dark gray fine sandy loam. The next layer is mottled pale brown, light yellowish brown, and gray sandy loam. The subsoil is mottled in shades of brown and gray throughout. It is loam in the upper part, sandy loam in the next part, loam in the following part, and sandy clay loam in the lower part.

The level and very gently sloping, moderately well drained Prentiss soils are on low ridges. They have a surface layer of dark grayish brown fine sandy loam. The upper part of the subsoil is yellowish brown, mottled sandy loam and loam. The lower part is a fragipan. It is mottled yellowish brown, pale brown, and strong brown loam in the upper part. It is mottled yellowish brown, light gray, strong brown, and light yellowish brown sandy loam in the lower part.

Of minor extent are Abita, Bassfield, Cahaba, Fluker, and Latonia soils and Pits. Abita soils are slightly lower on the landscape than the Prentiss soils. Bassfield, Cahaba, and Latonia soils are higher on the landscape than the Prentiss soils. They are well drained. Fluker soils are in landscape positions similar to those of the Stough soils. Pits are excavations from which sand, gravel, or loamy material has been mined.

Most of the acreage is used as woodland. A small acreage is used for crops, pasture, or urban uses.

The soils in this map unit are dominantly moderately well suited to woodland. Prentiss soils are well suited to this use. The main limitation is the wetness, which restricts the use of equipment, increases the seedling mortality rate, and increases the hazard of soil compaction. Flooding is a hazard in some areas of Myatt soils. The restricted rooting depth is a limitation in areas of Prentiss soils. Competition from understory plants is a hazard in all of the soils in this map unit.

The soils in this map unit are mainly moderately well suited to crops and pasture. Stough and Prentiss soils are well suited to pasture. Frequently flooded areas of Myatt soils are poorly suited to crops and pasture. The main limitations are the seasonal wetness, low fertility, and the potential aluminum toxicity. Erosion is a hazard in sloping areas. The restricted rooting depth and the soil droughtiness are additional limitations in areas of Prentiss soils.

The soils in this map unit are mainly poorly suited to urban uses and intensive recreational areas. Prentiss soils are moderately well suited to these uses. The wetness, flooding, and moderately slow permeability are the main limitations. Slope is an additional limitation in some areas of Prentiss soils. Frequently flooded areas of Myatt soils are generally not suited to these uses.

4. Cahaba-Prentiss-Bassfield

Gently sloping, level, and very gently sloping, well drained and moderately well drained soils that have a loamy surface layer and subsoil and a sandy or loamy substratum

This map unit consists of soils on stream terraces, mainly along the Bogue Chitto and Pearl Rivers. The landscape is made up of low ridges and convex side slopes. Slopes range from 0 to 5 percent.

This map unit makes up about 9 percent of the land area in the parish. It is about 32 percent Cahaba soils, 30 percent Prentiss soils, 25 percent Bassfield soils, and 13 percent soils of minor extent.

Cahaba soils are gently sloping and well drained. They are on low ridges and convex side slopes. They have a surface layer of grayish brown fine sandy loam. The subsoil is yellowish red sandy clay loam in the upper part and red sandy clay loam in the lower part. The substratum is strong brown, mottled loamy sand.

Prentiss soils are level, very gently sloping, and moderately well drained. They are on low ridges. They have a surface layer of dark grayish brown fine sandy loam. The upper part of the subsoil is yellowish brown, mottled sandy loam and loam. The lower part is a fragipan. It is mottled yellowish brown, pale brown, and strong brown loam in the upper part and is mottled yellowish brown, light gray, and light yellowish brown sandy loam in the lower part.

Bassfield soils are very gently sloping and are well drained. They are on convex slopes. They have a surface layer of grayish brown sandy loam. The next layer is mottled brown and yellowish brown sandy loam. The subsoil is yellowish red sandy loam. The substratum is yellowish brown, mottled loamy sand.

Of minor extent are Abita, Fluker, Stough, Latonia, and Myatt soils. The somewhat poorly drained Abita soils are in landscape positions slightly lower than those of the Prentiss soils. The somewhat poorly drained Fluker and Stough soils are on broad flats. The well drained Latonia soils are in landscape positions similar to those of the Bassfield and Cahaba soils. The poorly drained Myatt soils are on broad flats, in drainageways, and in depressions.

The soils in this map unit are used mainly as woodland or pasture. A few large areas of Cahaba soils are used as urban land. A small acreage is used for crops.

The soils in this map unit are well suited to woodland. They have few limitations for this use. The competition from understory plants and the hazard of soil compaction are the main concerns for woodland managers. Prentiss soils also have a restricted rooting depth.

The soils in this map unit are moderately well suited to crops and are well suited to pasture. The slope, low fertility, potential aluminum toxicity, restricted rooting depth, and soil droughtiness are the main limitations. Seasonal wetness in the Prentiss soil is an additional limitation.

The soils in this map unit are mainly well suited to urban uses and intensive recreational areas. The slope, seasonal wetness, and moderately slow permeability are the main limitations. Also, seepage can be a problem for some sanitary facilities, and the cutbanks of shallow excavations cave easily.

Soils on Flood Plains

This group of map units consists of well drained, somewhat poorly drained, and poorly drained, loamy soils on the flood plains along the major streams and drainageways. The soils are frequently flooded. The two map units in this group make up about 19 percent of the land area in Washington Parish. Most of the acreage is used as woodland, but a small acreage is used as pasture.

5. Arkabutla-Rosebloom-Jena

Nearly level, somewhat poorly drained, poorly drained, and well drained soils that are loamy throughout or have a loamy surface layer and subsoil and a sandy substratum

This map unit consists of soils on the flood plains of the Pearl River and its tributaries. These soils are frequently flooded. Slopes range from 0 to 2 percent.

This map unit makes up about 4 percent of the land area in the parish. It is about 42 percent Arkabutla soils, 32 percent Rosebloom soils, 21 percent Jena soils, and 5 percent soils of minor extent.

The somewhat poorly drained Arkabutla soils are on low ridges. They have a surface layer of dark grayish brown silt loam, loam, or silty clay loam. The subsoil is brown, mottled silt loam in the upper part, light brownish gray, mottled silt loam in the next part, and light brownish gray silty clay loam in the lower part.

The poorly drained Rosebloom soils are on narrow flats and in swales. They have a surface layer of dark grayish brown silt loam or silty clay loam. The upper part of the subsoil is light brownish gray, mottled silt loam. It is gray, mottled silty clay loam in the middle and lower parts.

The well drained Jena soils are on ridges. They have a surface layer of brown fine sandy loam, sandy loam, or very fine sandy loam. The subsoil is yellowish brown sandy loam in the upper part and very pale brown sandy loam in the lower part. The substratum is light yellowish brown loamy fine sand.

Of minor extent are Cahaba, Myatt, Ouachita, Bibb, and Arat soils. The well drained Cahaba soils and the poorly drained Myatt soils are on nearby stream terraces. The well drained Ouachita soils are on ridges. The poorly drained Bibb soils are between ridges. The very poorly drained Arat soils are in abandoned stream channels and in backswamps.

Most of the acreage is used as woodland. A small acreage is used as pasture.

The soils in this map unit are moderately well suited to woodland. The flooding and wetness severely limit the use of equipment and cause moderate seedling mortality. The plant competition and the hazard of soil compaction are additional concerns for woodland managers.

The soils in this map unit are poorly suited to crops and pasture because of the flooding and the wetness. They are not suited to urban uses or intensive recreational areas. The flooding and the wetness are generally too severe for these uses.

6. Ouachita-Bibb-Jena

Nearly level, well drained and poorly drained soils that are loamy throughout or have a loamy surface layer and subsoil and a sandy substratum

This map unit consists of soils on the flood plains along the major streams. The landscape is made up of low ridges and shallow swales. Slopes range from 0 to 2 percent.

This map unit makes up about 15 percent of the land area in the parish. It is about 40 percent Ouachita soils, 30 percent Bibb soils, 20 percent Jena soils, and 10 percent soils of minor extent.

Ouachita soils are well drained and are on low ridges. They have a surface layer of brown silt loam. The subsoil is yellowish brown silty clay loam in the upper part, dark yellowish brown, mottled silty clay loam in the next part, and yellowish brown, mottled loam in the lower part.

Bibb soils are poorly drained and are in swales and low positions between ridges. They have a surface layer of dark grayish brown fine sandy loam. The next layer is dark gray fine sandy loam. The underlying material is gray sandy loam in the upper part and light gray, mottled sandy loam in the lower part.

Jena soils are well drained and are on low convex ridges. They have a surface layer of brown fine sandy loam. The subsoil is brownish yellow, mottled loam in the upper part and yellowish brown, mottled sandy loam in the lower part. The substratum is light yellowish brown, mottled loamy fine sand.

Of minor extent are Cahaba, Myatt, and Arat soils. The well drained Cahaba soils and the poorly drained Myatt soils are on nearby stream terraces, and the very poorly drained Arat soils are in abandoned stream channels and in backswamps.

Most of the soils in 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 flooding and the wetness limit the use of equipment and cause moderate or severe seedling mortality. The competition from understory plants and the hazard of soil compaction are additional concerns for woodland managers.

The soils in this map unit are poorly suited to pasture and crops because of the flooding and wetness. They are not suited to intensive recreational areas or urban uses. The flooding and wetness are generally too severe for these uses.

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 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, wetness, 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, Ruston fine sandy loam, 1 to 3 percent slopes, is one of two phases of the Ruston series.

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

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, Bibb, and Jena 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.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol 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.

All of the soils in Washington Parish, except for those soils in swamps and on flood plains that are frequently flooded, were mapped at the same level of detail. Flooding or ponding limits the use and management of these soils, and separating all of the soils in these areas would be of little importance to the land user.

The boundaries of the detailed soil map units in Washington Parish were matched with those of the previously completed surveys of St. Tammany and Tangipahoa Parishes and Marion, Pike, and Walthall Counties, Mississippi. In a few areas, however, the names of the map units differ because of changes in soil series concepts, differences in map unit design, and changes in soil patterns near the survey area boundary.

Aa—Abita silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is in slightly elevated areas on broad stream or marine terraces. Areas of this soil range from about 10 to 200 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 6 inches thick. In sequence downward, the subsoil to a depth of about 63 inches is brown, mottled silt loam in the upper part; light yellowish brown and light brownish gray silt loam in the next part; mottled strong brown, gray and red silty clay loam in the next part; light brownish gray, mottled silty clay loam in the next part; and light brownish gray, mottled clay loam in the lower part. In areas, the lower part of the subsoil is yellowish brown or light yellowish brown.

This soil is characterized by low fertility. It has high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs slowly off the surface. A seasonal high water table is 1.5 to 3.0 feet below the surface from December through April. Adequate water is available to plants in most years. The shrink-swell potential is moderate in the subsoil.

Included with this soil in mapping are a few small areas of Bassfield, Cahaba, Fluker, Myatt, Prentiss, and Stough soils. The well drained Bassfield and Cahaba soils are higher on the landscape than the Abita soil and are well drained and have a reddish subsoil. Fluker and Stough soils are on broad flats. Fluker soils have a fragipan. Stough soils have less clay in the subsoil than the Abita soil. The poorly drained Myatt soils are in lower positions and are grayish throughout the profile. The moderately well drained Prentiss soils are slightly higher on the landscape than the Abita soil and contain more sand and less clay in the subsoil. A few small areas of the Abita soils are at low elevations and are subject to rare flooding. Also included are a few small areas of urban land. Included soils and miscellaneous areas make up about 10 percent of the map unit.

Most of the acreage of the Abita soil is used as woodland. A small acreage is used as commercial and residential sites, pasture, or cropland.

This soil is moderately well suited to woodland. Suitable trees to plant are loblolly pine, slash pine, and longleaf pine. The main concerns in producing and harvesting timber are the restricted use of equipment, the hazard of soil compaction, and moderate competition from understory plants because of wetness. Soil compaction can be reduced by using suitable logging systems, laying out skid trails in advance, and harvesting timber when the soil is least susceptible to compaction. After harvesting, reforestation can be carefully managed to reduce the competition from undesirable understory plants.

This soil is well suited to pasture. The main suitable pasture plants are common bermudagrass, improved bermudagrass, ryegrass, tall fescue, bahiagrass, white clover, winter peas, and vetch. The main limitations are wetness and low fertility. Grazing when the soil is wet results in compaction of the surface layer. Shallow ditches help to remove excess surface water. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum production of forage.

This soil is moderately well suited to crops. The main limitations are wetness, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. A drainage system is needed for most cultivated crops and pasture plants. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Returning crop residue to the soil or regularly adding other organic material improves fertility, reduces crusting, and increases the water intake rate. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is moderately well suited to urban uses. It has moderate limitations for dwellings and severe limitations for sanitary facilities and local roads and streets. The main limitations are wetness, slow permeability, moderate shrink-swell potential, and low strength on sites for roads and streets. A drainage system is necessary if roads and building foundations are constructed. Foundations for buildings can be designed to withstand the shrinking and swelling of the soil. The design of roads can offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability. Sewage lagoons or self-contained disposal units can be used to dispose of sewage properly.

This soil is moderately well suited to intensive recreational uses. The main limitations are wetness and slow permeability. Good drainage should be provided for intensively used areas, such as playgrounds. Using shallow ditches or providing the proper grade can improve drainage.

This soil is well suited as habitat for openland and woodland wildlife. The habitat for white-tailed deer, turkey, and squirrels can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the seed-producing plants for quail and turkey. The habitat for doves, quail, rabbits, and other nongame birds and animals can be improved by planting appropriate vegetation in field borders and in odd areas.

This Abita soil is in capability subclass IIw. The woodland ordination symbol is 11W.

Ab—Abita silt loam, 2 to 5 percent slopes. This gently sloping, somewhat poorly drained soil is on low, convex ridges and on side slopes along drainageways on stream or marine terraces. Areas of this soil range from about 10 to 100 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsoil to a depth of about 60 inches is light yellowish brown, mottled silt loam in the upper part; mottled light brownish gray, light yellowish brown, yellowish brown, and red silty clay loam in the next part; and light brownish gray, mottled silty clay loam in the lower part. In areas, the lower part of the subsoil is yellowish brown or light yellowish brown.

This soil is characterized by low fertility. It has high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a medium rate. A seasonal high water table is 1.5 to 3.0 feet below the surface from December through April. Adequate water is available to plants in most years. The shrink-swell potential is moderate in the subsoil.

Included with this soil in mapping are a few small areas of Bassfield, Cahaba, Fluker, Myatt, Prentiss, and Stough soils. The well drained Bassfield and Cahaba soils are higher on the landscape than the Abita soil. They have a reddish subsoil. Fluker and Stough soils are on broad flats. Fluker soils have a fragipan. Stough soils contain less clay in the subsoil than the Abita soil. The poorly drained Myatt soils are lower on the landscape than the Abita soil and are grayish throughout the profile. Prentiss soils are in slightly higher positions and contain less clay in the subsoil. Also included are a few small areas of urban land. A few small areas of Abita soils are at low elevations and are subject to rare flooding. Included soils and miscellaneous areas make up about 10 percent of the map unit.

Most of the acreage of the Abita soil is used as woodland. A small acreage is used as commercial and residential sites, pasture, or cropland.

This soil is moderately well suited to woodland. Suitable trees to plant are loblolly pine, slash pine, and longleaf pine. The main concerns in producing and harvesting timber are the restricted use of equipment and the hazard of soil compaction because of wetness. Also, the competition from understory plants is moderate. Harvesting when the soil is dry reduces the hazard of soil compaction. After harvesting, reforestation can be carefully managed to reduce the competition from undesirable understory plants.

This soil is well suited to pasture. The main limitations are wetness, low fertility, and a moderate hazard of erosion. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff. 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 where practical. The main suitable pasture plants are common bermudagrass, improved bermudagrass, ryegrass, tall fescue, bahiagrass, winter peas, vetch, and white clover.

This soil is moderately well suited to crops. The main limitations are slope, wetness, low fertility, and potentially toxic levels of aluminum in the root zone. Proper row arrangement, field ditches, and suitable outlets help to remove the excess surface water. Crop residue left on or near the surface helps to conserve moisture, maintain tilth, and control erosion. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by chiseling or subsoiling when the soil is dry. Erosion can be controlled by seeding early in the fall, using conservation tillage, and constructing terraces, diversions, and grassed waterways. Crops respond well to additions of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is moderately well suited to urban uses. It has moderate limitations for dwellings and severe limitations for sanitary facilities and local roads and streets. The main limitations are wetness, the slope, slow permeability, the moderate shrink-swell potential, and low strength on sites for roads and streets. Erosion is a moderate hazard in areas where the surface is disturbed during construction. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability. Self-contained disposal units can be used to dispose of sewage properly. A drainage system is necessary where buildings are constructed. Excess surface water can be removed by shallow ditches or by providing the proper grade. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. The design of roads can offset the limited ability of the soil to support a load. Preserving the existing plant cover during construction or revegetating disturbed areas around construction sites as soon as possible helps to control soil erosion.

This soil is moderately well suited to intensive recreational uses. The main limitations are wetness, slow permeability, and a moderate hazard of erosion. Good drainage should be provided for the most intensively used areas. Excess surface water can be removed by providing the proper grade. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for white-tailed deer, turkeys, and squirrels can be improved by planting or encouraging the growth of existing oak trees. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the seed-producing plants for quail and turkey. Habitat for doves, rabbits, quail, and nongame birds and animals can be improved by providing undisturbed, vegetated areas around the edges of fields.

This Abita soil is in capability subclass IIe. The woodland ordination symbol is 11W.

Ag—Angie silt loam, 1 to 5 percent slopes. This gently sloping, moderately well drained soil is on ridgetops in the uplands. Areas of this soil range from about 10 to 500 acres in size.

Typically, the surface layer is grayish brown silt loam about 3 inches thick. The subsurface layer is light yellowish brown silt loam about 4 inches thick. The subsoil to a depth of about 62 inches is yellowish brown, mottled silty clay loam in the upper part; strong brown, mottled clay in the next part; and gray, mottled clay in the lower part. In areas, one or more layers in the subsoil is reddish.

This soil is characterized by low fertility. It has high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a medium rate. The seasonal high water table ranges from about 3 to 5 feet below the surface from December through April. The shrink-swell potential is high in the subsoil.

Included in this map unit are a few small areas of Ruston, Savannah, Smithdale, and Tangi soils. The well drained Ruston soils have more convex slopes than the Angie soil and are loamy throughout. Savannah and Tangi soils are in landscape positions similar to those of the Angie soil and have a fragipan. The well drained Smithdale soils are on steeper side slopes and are loamy throughout. Also included are a few small areas of Abita soils that have slopes of more than 5 percent or are moderately or severely eroded. Included soils make up about 10 percent of the map unit.

Most of the acreage of the Angie soil is used as woodland. A small acreage is used as pasture, cropland, or homesites.

This soil is moderately well suited to woodland. Suitable trees to plant are loblolly pine and slash pine. Wetness causes a restricted use of equipment and a hazard of soil compaction. Competition from understory plants is severe. Planting and harvesting when the surface is dry reduces the hazard of soil compaction. Site preparation controls initial plant competition, and spraying controls subsequent growth.

This soil is moderately well suited to pasture. The main limitations are slope, low fertility, and wetness. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff. 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 where practical. The main suitable pasture plants are common bermudagrass, improved bermudagrass, ryegrass, tall fescue, bahiagrass, winter peas, vetch, arrowleaf clover, and white clover.

This soil is moderately well suited to crops. The main limitations are slope, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. Suitable crops are soybeans, corn, grain sorghum, and vegetables. Erosion can be controlled by seeding early in the fall, using conservation tillage, and constructing terraces, diversions, and grassed waterways. Crop residue left on or near the surface helps to conserve moisture, maintain tilth, and control erosion. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is poorly suited to urban uses. It has severe limitations for these uses. The main limitations are slow permeability, wetness, the high shrink-swell potential in the subsoil, and low strength on sites for roads and streets. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability in the subsoil. Self-contained disposal units can be used to dispose of sewage properly. A drainage system can improve the soil as a site for dwellings. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has a low shrink-swell potential. The design of roads can offset the limited ability of the soil to support a load.

This soil is moderately well suited to intensive recreational uses. The main limitations are wetness, slow permeability, and a moderate erosion hazard. Good drainage should be provided for the most intensively used areas. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by applying fertilizer and controlling traffic.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for woodland wildlife can be improved by planting or encouraging the growth of existing oak trees. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the seed-producing plants for quail and turkey. Habitat for doves, rabbits, quail, and nongame birds and animals can be improved by providing undisturbed, vegetated areas around the edges of fields. Leaving crop residue on the soil surface during winter provides additional food to birds and animals.

This Angie soil is in capability subclass IIIe. The woodland ordination symbol is 10W.

AR—Arat muck. This level, very poorly drained, very fluid, mineral soil is in abandoned stream channels and in backswamps. It is ponded most of the time and is frequently flooded. Areas are irregular in shape and are up to several thousand acres in size. Fewer observations were made in areas of this soil than in most other areas. The detail in mapping, however, is adequate for the expected uses of the soil. Slopes are less than 1 percent.

Typically, the surface layer is very dark gray, very fluid muck about 13 inches thick. The next layer is dark gray, very fluid silty clay loam about 9 inches thick. The underlying material to a depth of about 70 inches is gray, very fluid silty clay loam in the upper part and dark grayish brown, very fluid silty clay loam in the lower part. Fragments of wood are throughout the soil.

This Arat soil is ponded most of the time and is frequently flooded for very long periods. The depth of the floodwater ranges from 3 to 7 feet. During periods when the soil is not flooded, the water table ranges from 0.5 foot below the surface to 3 feet above the surface. The soil has low strength or capacity to support a load. The permeability is slow. The total subsidence potential is medium. Unless the soil is drained, the shrink-swell potential is low. After drainage, the shrink-swell potential is moderate.

Included with this soil in mapping are a few large areas of Arkabutla, Bibb, Jena, Ouachita, and Rosebloom soils. All of these soils are higher on the landscape than the Arat soil and are firm or friable throughout. Also included are a few small areas of soils that are similar to the Arat soil but have a thick mucky surface layer. Included soils make up about 5 percent of the map unit.

The natural vegetation consists mainly of water-tolerant trees and aquatic understory plants. The common trees are baldcypress and water tupelo. Understory and aquatic vegetation consists mainly of alligatorweed, water hyacinth, bulltongue, arrowhead, duckweed, and pickerelweed. The natural regeneration of baldcypress and water tupelo trees is very slow. In areas, most of the trees have been harvested and only open water or aquatic understory plants remain.

Most of the acreage of the Arat soil is used as woodland. It is used as habitat for wetland wildlife and for extensive recreational activities, such as hunting.

This soil is well suited as habitat for wetland wildlife (fig. 2). It provides roosting areas for migratory ducks. It also provides both food and nesting sites for wood ducks, squirrels, alligators, and nongame birds. The soil also provides a suitable habitat for large numbers of crawfish and for furbearers, such as raccoon, nutria, and mink. Water-control structures that are designed for intensive wildlife management are difficult to construct because of the instability and fluid nature of the soil material. Hunting waterfowl is a popular sport in most areas of this map unit.

This soil is poorly suited to woodland. Few areas are managed for timber production because the trees grow slowly and special equipment is needed to harvest the timber. The regeneration of trees generally only occurs on rotting logs, stumps, and root mats. Seedling mortality is severe because of the ponding and flooding. This soil cannot support the load of most types of harvesting equipment.

This soil is not suited to crops or pasture. The ponding, flooding, and low strength are too severe for these uses. The soil is generally too soft and boggy to support livestock grazing.

This soil is not suited to urban or intensive recreational uses. The ponding, flooding, and low strength are too severe for these uses. Drainage and protection from flooding are possible, but they require the construction of large water-control structures. Drainage ditches are difficult to construct because of stumps and logs that are buried in the soil. If areas of this soil are drained, subsidence is a problem.

This Arat soil is in capability subclass VIIIw. The woodland ordination symbol is 5W.

AT—Arkabutla, Rosebloom, and Jena soils, frequently flooded. These nearly level, somewhat poorly drained, poorly drained, and well drained soils are on the flood plains of the Pearl River and its tributaries. The mapped areas range from 100 to several thousand acres in size. They contain about 42 percent Arkabutla soil, about 32 percent Rosebloom soil, and about 21 percent Jena soil. Most of the mapped areas contain all three soils, but some areas contain only one or two. In the mapped areas that contain all three soils, the Arkabutla soil is on low ridges, the Jena soil is on the high convex ridges, and the Rosebloom soil is on narrow flats and in swales. The texture of the surface layer changes as floodwater reworks the deposits. Fewer observations were made in these areas than in most other areas. The detail in

Figure 2.—An area of Arat muck. This soil is well suited as habitat for wetland wildlife, such as waterfowl and furbearing animals.

mapping, however, is adequate for expected uses of the soil. Slopes are less than 2 percent.

Typically, the somewhat poorly drained Arkabutla soil has a surface layer of dark grayish brown silt loam, loam, or silty clay loam about 5 inches thick. The subsoil to a depth of about 62 inches is brown, mottled silt loam in the upper part, light brownish gray, mottled silt loam in the next part, and light brownish gray, mottled silty clay loam in the lower part.

The Arkabutla soil has medium fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs slowly off the surface. The soil is subject to brief to very long periods of flooding, mainly in the winter and spring. However, flooding can occur at any time of the year. A seasonal high water table is about 1.0 to 1.5 feet below the surface from January through April. The soil has a low shrink-swell potential in the subsoil.

Typically, the poorly drained Rosebloom soil has a surface layer of dark grayish brown silt loam or silty clay loam about 7 inches thick. The subsoil to a depth of about 60 inches is light brownish gray, mottled silt loam in the upper part and gray, mottled silty clay loam in the middle and lower parts.

The Rosebloom soil has medium fertility and moderately high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs slowly off the surface. This soil is subject to brief to very long periods of flooding, mainly in winter and spring. However, flooding can occur at any time of year. A seasonal high water table is at the surface to about 1 foot below the surface from January through March. The shrink-swell potential is moderate in the subsoil.

Typically, the well drained Jena soil has a surface layer of brown fine sandy loam, sandy loam, or very fine sandy loam about 7 inches thick. The subsoil to a depth of about 33 inches is yellowish brown sandy loam in the upper part and very pale brown sandy loam in the lower part. The substratum to a depth of about 60 inches is yellowish brown loamy fine sand.

The Jena soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone 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 soil is subject to very brief to long periods of flooding, mainly in the winter and spring. However, flooding can occur any time of the year. The soil has a low shrink-swell potential.

Included with these soils in mapping are a few small areas of Arat, Bibb, and Ouachita soils. Arat soils are in abandoned stream channels and in backswamps. They are very fluid throughout. Bibb soils are in landscape positions similar to those of the Rosebloom soil, and they contain more sand throughout than the Rosebloom soil. Ouachita soils are in landscape positions similar to those of the Jena soil, and they contain less sand throughout than the Jena soil. Also included are a few small areas of soils that are similar to the Arkabutla soil but have an overwash of sand. Included soils make up about 5 percent of the map unit.

Most areas of this map unit are used as woodland. They are used as habitat for woodland wildlife. A few small areas are used for pasture.

These soils are moderately well suited to woodland. The main concerns for producing and harvesting timber are the severe equipment use limitation and the moderate seedling mortality caused by wetness and flooding. Plant competition is moderate or severe, and the soils are easily compacted if they are moist and heavy equipment is used. Suitable trees to plant are green ash, cherrybark oak, Nuttall oak, water oak, willow oak, and sweetgum. Conventional methods of harvesting timber generally can be used, but their use may be limited during rainy periods. Trees should be harvested during dry periods to reduce rutting and soil compaction. After harvesting, reforestation can be carefully managed to reduce competition from undesirable understory plants. Special planting stock that is larger than the stock normally used or containerized planting stock can reduce the seedling mortality rate.

These soils are poorly suited to pasture. The main hazard is flooding, and the main limitation is the wetness. Suitable pasture plants are common bermudagrass, dallisgrass, ryegrass, tall fescue, and white clover. The use of equipment is limited by the wetness. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer are generally not beneficial because of the frequent overflow.

These soils are poorly suited to crops because of the frequent overflow. The main limitations are the low and medium fertility and the potentially toxic levels of exchangeable aluminum in the root zone. Crops that are planted late and are early maturing can be grown in some years. Drainage and protection from flooding are possible, but they require major structures, such as levees.

These soils are moderately well suited or well suited as habitat for woodland wildlife. They are moderately well suited as habitat for openland wildlife. The Rosebloom soil has a good potential for wetland wildlife. Habitat for wildlife can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Constructing shallow ponds in areas of the Rosebloom soil can improve the habitat for waterfowl and furbearers.

These soils are not suited to urban uses or intensively used recreational areas. The hazard of flooding is generally too severe for these uses.

These soils are in capability subclass Vw. The woodland ordination symbol is 12W for the Arkabutla soil and is 9W for the Rosebloom and Jena soils.

Ba—Bassfield sandy loam, 1 to 3 percent slopes. This very gently sloping, well drained soil is on convex slopes on stream terraces along the major streams. Areas range from about 5 to 150 acres in size.

Typically, the surface layer is grayish brown sandy loam about 5 inches thick. The next layer is mottled brown and yellowish brown sandy loam about 6 inches thick. The subsoil to a depth of about 41 inches is yellowish red sandy loam. The substratum to a depth of about 62 inches is yellowish brown, mottled loamy sand.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderately rapid rate. Water runs off the surface at a medium rate. Plants are damaged by the lack of water during dry periods in the summer and fall of some years. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Fluker, Latonia, Myatt, Prentiss, and Stough soils. The somewhat poorly drained Fluker and Stough soils are on broad flats. Fluker soils have a fragipan, and Stough soils have a mottled, brownish and grayish subsoil. Latonia soils are in landscape positions similar to those of the Bassfield soil. They have a brownish and yellowish subsoil. The poorly drained Myatt soils are on broad flats and are grayish throughout the profile. The moderately well drained Prentiss soils are slightly lower on the landscape than the Bassfield soil and have a brownish, mottled subsoil and a fragipan. Also included are a few small areas of Bassfield soils along drainageways that are subject to rare flooding. Also included are a few small areas of urban land. Included soils and miscellaneous areas make up about 10 percent of the map unit.

Most of the acreage of the Bassfield soil is used as woodland. A small acreage is used for pasture or as commercial or residential sites.

This soil is well suited to woodland and has few limitations for this use. Suitable trees to plant are loblolly pine, slash pine, cherrybark oak, Shumard oak, and sweetgum. The soil has a slight susceptibility to compaction. The hazard of soil compaction can be reduced by restricting site preparation and harvesting activities to periods when the soil is dry.

This soil is well suited to pasture. Low fertility is the main limitation. The soil is subject to erosion until pasture grasses become established. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, tall fescue, crimson clover, and white clover. A seedbed should be prepared across the slope to help control erosion. Proper grazing management, weed control, and applications of fertilizer are necessary for the maximum quality of forage.

This soil is moderately well suited to cultivated crops. The main suitable crops are corn, soybeans, grain sorghum, and vegetables. The main limitations are slope, low fertility, potentially toxic levels of exchangeable aluminum in the root zone, and soil droughtiness. The soil is friable, can be easily kept in good tilth, and can be worked throughout a wide range in moisture content. Soil droughtiness is a slight limitation for crops. The hazard of erosion can be reduced if fall grain or winter pasture grasses are seeded early and if tillage and seeding are on the contour or across the slope. Maintaining crop residue on or near the surface helps to conserve moisture, maintain tilth, and control erosion. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum in the root zone.

This soil is well suited to urban uses. It has slight limitations for dwellings and local roads and streets. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating can help to establish lawn grasses and other small-seeded plants. Seepage is a potential hazard in areas where the soil is used for sewage lagoons or sanitary landfills. Shallow excavations are difficult to construct because the cutbanks cave easily. The soil is a probable source of sand for use in construction.

This soil is well suited to intensive recreational areas. The slope is a moderate limitation for playgrounds. Erosion can be controlled by maintaining a plant cover. The plant cover can be maintained by controlling traffic, applying fertilizer, and irrigating.

This soil is well suited as habitat for woodland and openland wildlife. Habitat for white-tailed deer, turkeys, and squirrels can be improved by encouraging the growth of oak and other mast-producing trees. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the seed-producing plants for quail and turkey. Leaving undisturbed and vegetated areas around fields can improve the habitat for openland wildlife.

This Bassfield soil is in capability subclass IIe. The woodland ordination symbol is 9A.

Ca—Cahaba fine sandy loam, 1 to 5 percent slopes. This gently sloping, well drained soil is on ridges and side slopes of stream terraces along the major streams. Areas range from about 5 to 100 acres in size.

Typically, the surface layer is grayish brown fine sandy loam about 5 inches thick. The subsoil to a depth of about 43 inches is yellowish red sandy clay loam in the upper part and red sandy clay loam in the lower part. The substratum to a depth of about 60 inches is strong brown, mottled loamy sand.

This soil is characterized by low fertility. It has high levels of exchangeable aluminum in the root zone 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. Plants are damaged by the lack of water during dry periods in the summer and fall of some years. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Fluker, Latonia, Prentiss, and Stough soils. The somewhat poorly drained Fluker and Stough soils are on broad flats. Fluker soils have a fragipan, and

Stough soils have a mottled brownish and grayish subsoil. Latonia soils are in landscape positions similar to those of the Cahaba soil. They have a brownish subsoil that contains less clay in the upper part than the Cahaba soil. The moderately well drained Prentiss soils are in slightly lower positions and have a fragipan. Also included are a few small areas of Cahaba soils that have slopes of 5 to 8 percent, a few small areas of Cahaba soils in low areas along drainageways that are subject to rare flooding, and a few small areas of urban land. Included soils and miscellaneous areas make up about 15 percent of the map unit.

Most of the acreage of the Cahaba soil is used as pasture or urban land. A small acreage is used as woodland or for vegetable crops.

This soil is well suited to woodland and has few limitations for this use. Suitable trees to plant are loblolly pine, slash pine, sweetgum, cherrybark oak, Shumard oak, and water oak. The competition from understory plants is moderate. Site preparation controls the initial growth of undesirable understory plants, and controlled burning and spraying control the subsequent growth. The soil surface has a moderate susceptibility to compaction. Harvesting when the soil is dry reduces the hazard of soil compaction.

This soil is well suited to pasture. Low fertility is the main limitation. The soil is subject to erosion until pasture grasses become established. Proper grazing management, weed control, and applications of fertilizer are needed for the maximum quality of forage. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, tall fescue, arrowleaf clover, and white clover.

This soil is moderately well suited to cultivated crops. It is limited mainly by the slope, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. A tillage pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the tillage pan. Crop residue left on or near the surface helps to conserve moisture, maintain tilth, and control erosion. The main suitable crops are corn, soybeans, grain sorghum, and vegetables (fig. 3). Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is well suited to urban uses. It has only slight limitations for dwellings and local roads and streets. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion. Shallow excavations can be difficult to construct because the cutbanks cave easily. Seepage can be a hazard in areas where the soil is used for sewage lagoons or sanitary landfills. It can be reduced by lining the floor and walls of the lagoon or trench with impermeable material.

This soil is well suited to recreational uses. It has few limitations for these uses. The slope is a moderate limitation for playgrounds. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic, applying fertilizer, and irrigating.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for wildlife can be improved by planting appropriate vegetation or by promoting the natural establishment of desirable plants. Leaving crop residue on the soil surface during winter provides food for rabbits, doves, and nongame birds and animals. Controlled burning in pine forests increases the amount of browse for deer and seed-producing plants for turkeys and quail.

This Cahaba soil is in capability subclass IIe. The woodland ordination symbol is 9A.

Dp—Dumps. This map unit consists of areas used for refuse disposal. Dumps are nearly level to sloping. Areas generally range from 5 to 100 acres in size. Slopes range from 0 to 8 percent.

Typically, Dumps consist of successive layers of compacted refuse and thin soil layers. The combined thickness of these layers ranges from 5 feet to more than 30 feet.

This map unit is used mainly for the disposal of solid waste. Dumps are not suited to agricultural, forest, or urban uses. They are, however, used as commercial sites in some places, but the soil limitations are very difficult to overcome.

Fk—Fluker silt loam. This nearly level, somewhat poorly drained soil is in depressions in the uplands and on broad flats on stream terraces. Areas range from about 10 to 1,000 acres in size. Slopes range from 0 to 2 percent.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsoil to a depth of about 34 inches is yellowish brown silt loam in the upper part; yellowish brown, mottled silty clay loam in the next part; and light brownish gray and light gray, mottled silt loam in the lower part. Below this to a depth of about 60 inches is a fragipan. It is yellowish brown, mottled silt loam in the upper part. The lower part is mottled strong brown, pale brown, light brownish gray, and yellowish brown sandy loam.

Included with this soil in mapping are a few small areas of Abita, Bassfield, Cahaba, Myatt, Prentiss,

Figure 3.—Grain sorghum in an area of Cahaba fine sandy loam, 1 to 5 percent slopes. Grain sorghum is one of the major crops in the parish.

Savannah, and Stough soils. Abita soils have slightly more convex slopes than the Fluker soil, and Stough soils are in landscape positions similar to those of the Fluker soil. Abita and Stough soils do not have a fragipan. The well drained Bassfield and Cahaba soils are higher on the landscape than the Fluker soil. They have a reddish subsoil and do not have a fragipan. Prentiss and Savannah soils are in slightly higher positions and contain more sand in the subsoil than the Fluker soil. Included soils make up about 10 percent of the map unit.

The Fluker soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to 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 slowly off the surface. A seasonal high water table is perched on the fragipan at a depth of about 0.5 foot to 1.5 feet from December through April. The shrink-swell potential is low. The rooting depth is restricted by the fragipan.

Most of the acreage of this soil is used as woodland or pasture. A small acreage is used for crops, homesites, or intensive recreational activities.

This soil is moderately well suited to woodland. It has a high potential to produce sweetgum, loblolly pine, and slash pine. The main concerns for producing and harvesting timber are the restricted use of equipment and the hazard of soil compaction caused by wetness. Competition from understory plants is severe, and the rooting depth is restricted by the fragipan. After harvesting, reforestation can be carefully managed to reduce the competition from undesirable understory plants. Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling, which eliminates unwanted weeds, brush, or trees. Conventional methods of harvesting timber can be used, but their use may be limited during rainy periods, which are generally from January to April. Restricting site preparation and harvesting activities to dry periods reduces rutting and compaction.

This soil is well suited to pasture. The main limitations are wetness and low fertility. The rooting depth is restricted by the fragipan. The main suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, white clover, winter peas, vetch, tall fescue, 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 are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to crops. The main crops grown are vegetables, corn, and grain sorghum. The soil is limited mainly by wetness, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. The rooting depth is restricted by the fragipan. 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 suitable outlets are needed to remove the excess surface water. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is poorly suited to urban development. The main limitations are the wetness, slow permeability, and low strength on sites for roads and streets. The excess water can be removed by using shallow ditches and by providing the proper grade. The design of roads can offset the limited ability of the soil to support a load. The slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. A sewage lagoon or a self-contained disposal unit can be used to dispose of sewage properly. A drainage system is needed for the best results in growing most lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetable gardens.

This soil is poorly suited to recreational development. It is limited mainly by the wetness. A drainage system is needed for intensively used areas, such as camp areas and playgrounds. The plant cover can be maintained by controlling traffic.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for wildlife can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Leaving stubble from crops, such as grain sorghum, on the surface provides food and cover for doves, rabbits, and quail. Selectively harvesting timber preserves the existing oak and hickory trees for use by squirrels, turkeys, and white-tailed deer.

This Fluker soil is in capacity subclass IIw. The woodland ordination symbol is 11W.

Lt—Latonia fine sandy loam. This nearly level, well drained soil is on stream terraces along the major streams. Areas range from about 5 to 150 acres in size. Slopes range from 0 to 2 percent.

Typically, the surface layer is grayish brown fine sandy loam about 4 inches thick. The subsoil to a depth of about 34 inches is yellowish brown sandy loam in the upper and middle parts and brownish yellow, mottled loamy sand in the lower part. The substratum to a depth of about 60 inches is light gray, mottled sand.

This soil is characterized by low fertility. It has high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderately rapid rate. Water runs slowly off the surface. Plants are damaged by the lack of water during dry periods in the summer and fall of some years. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Bassfield, Cahaba, Fluker, Myatt, Prentiss, and Stough soils. Bassfield and Cahaba soils are in landscape positions similar to those of the Latonia soil and have a reddish subsoil. The somewhat poorly drained Fluker and Stough soils are on broad flats. Fluker soils have a fragipan, and Stough soils have grayish mottles in the upper part of the subsoil. The poorly drained Myatt soils are on broad flats and in depressions. They are grayish throughout the profile. The moderately well drained Prentiss soils are slightly lower on the landscape than the Latonia soil and have a fragipan. Also included are a few small areas of Latonia soils near major drainageways that are subject to rare flooding and a few small areas of urban land. Included soils and miscellaneous areas make up about 10 percent of the map unit.

Most of the acreage of the Latonia soil is used as woodland. A small acreage is used for pasture or as commercial or residential sites.

This soil is well suited to woodland and has few limitations for this use. Suitable trees to plant are loblolly pine and slash pine. The soil has a moderate susceptibility to compaction. The hazard of soil compaction can be reduced by preparing the site and harvesting when the soil is dry.

This soil is well suited to pasture. Low fertility and soil droughtiness are the main limitations. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, tall fescue, crimson clover, and white clover. Proper grazing management, weed control, and applications of fertilizer are needed for the maximum quality of forage.

This soil is moderately well suited to cultivated crops. The main suitable crops are corn, soybeans, grain sorghum, and vegetables. The main limitations are low fertility, potentially toxic levels of exchangeable aluminum in the root zone, and soil droughtiness. The soil is friable, can be easily kept in good tilth, and 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. In areas that have suitable water available, supplemental irrigation can prevent crop damage during dry periods in most years. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum in the root zone.

This soil is well suited to urban uses. It has only slight limitations for dwellings and local roads and streets. Seepage is a major hazard for most sanitary facilities. Mulching, applying fertilizer, and irrigating are necessary to establish lawn grasses and other small-seeded plants. If the density of housing is moderate to high, a community sewage system is necessary to prevent the contamination of water supplies as a result of seepage. Shallow excavations are difficult to construct because the cutbanks cave easily.

This soil is well suited to intensive recreational areas. It has few limitations for this use. The plant cover can be maintained by applying fertilizer and controlling traffic. Irrigation ensures the survival of grasses and ornamental plants.

This soil is well suited as habitat for woodland and openland wildlife. Habitat for woodland wildlife can be improved by encouraging the growth of oak and other mast-producing trees. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and seed-producing plants for quail and turkey. Leaving undisturbed and vegetated areas around fields can improve the habitat for openland wildlife.

This Latonia soil is in capability subclass IIs. The woodland ordination symbol is 9A.

Mt—Myatt fine sandy loam. This level, poorly drained soil is on broad flats on stream terraces. It is subject to rare flooding. Areas range from 5 to 500 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is dark gray fine sandy loam about 8 inches thick. The subsurface layer is gray, mottled fine sandy loam about 8 inches thick. The subsoil to a depth of about 50 inches is gray, mottled sandy loam in the upper part and is mottled light brownish gray, yellowish brown, and strong brown sandy clay loam in the lower part. The substratum to a depth of about 64 inches is gray sandy clay loam.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderately slow rate. Water runs slowly off the surface and stands in low areas for long periods after heavy rains. Flooding is rare, but it can occur during unusually wet years. A seasonal high water table is at the surface to a depth of 1 foot below the surface from November through April. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Bassfield, Cahaba, Fluker, Prentiss, and Stough soils. All of these soils are higher on the landscape than the Myatt soil. Bassfield and Cahaba soils are well drained and have a reddish subsoil. Fluker and Prentiss soils have a fragipan. Stough soils have a brownish subsoil. Also included are a few large areas of urban land. Included soils and miscellaneous areas make up about 15 percent of the map unit.

Most of the acreage of the Myatt soil is used for woodland. A small acreage is used as commercial sites, residential sites, or cropland.

This soil is moderately well suited to woodland. The main concerns in producing and harvesting timber are the severe seedling mortality, the restricted use of equipment, and the hazard of soil compaction caused by wetness (fig. 4). Competition from understory plants is severe. After harvesting, reforestation can be carefully managed to reduce competition from undesirable understory plants. Harvesting only during the dry periods reduces rutting and soil compaction. Suitable trees to plant are loblolly pine, slash pine, water oak, Shumard oak, and sweetgum. Bedding and surface drainage improve the survival rate of pine seedlings.

This soil is moderately well suited to pasture. The main limitations are wetness and low fertility. The main suitable pasture plants are common bermudagrass, bahiagrass, tall fescue, ryegrass, white clover, and winter peas. Surface drainage can improve the suitability of this soil for pasture. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to crops. The main limitations are wetness, potentially toxic levels of exchangeable aluminum, and low fertility. Suitable crops are soybeans, corn, grain sorghum, vegetables, and

Figure 4.—An area of Myatt fine sandy loam. The wetness restricts the use of planting and harvesting equipment. A surface drainage system improves the suitability of this soil for woodland.

rice. Proper row arrangement, field ditches, and suitable outlets are necessary to remove the excess surface water. Maintaining crop residue on or near the surface helps to maintain soil tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum in the root zone.

This soil is poorly suited to urban uses. The main limitations are the wetness and moderately slow permeability. Flooding is the main hazard. Protection from flooding can be provided by constructing levees. Filling low areas prior to construction activities can help to prevent flooding. The excess water can be removed by using shallow ditches and by providing the proper grade. Septic tank absorption fields do not function properly during rainy periods because of the wetness and moderately slow permeability. A sewage lagoon or a self-contained disposal unit can be used to dispose of sewage properly.

This soil is poorly suited to intensive recreational areas. The main limitation is the wetness. Flooding is a hazard in camp areas. Good drainage should be provided for the most intensively used areas, such as playgrounds. Flooding can be controlled by constructing large, earthen levees.

This soil is well suited as habitat for wetland wildlife and is moderately well suited as habitat for openland and woodland wildlife. Habitat for wetland wildlife can be improved by constructing small ponds for use by waterfowl and furbearers. Habitat for woodland wildlife can be improved by encouraging the growth of oaks and other mast-producing trees. Prescribed burning can encourage the growth of palatable browse for white-tailed deer and the growth of seed-producing plants for turkey and quail. Providing undisturbed and vegetated areas around fields improves the habitat for openland wildlife.

This Myatt soil is in capability subclass IIIw. The woodland ordination symbol is 9W.

My—Myatt fine sandy loam, frequently flooded. This level, poorly drained soil is in depressions on stream terraces and in narrow drainageways. It is frequently flooded for brief periods. Areas range from about 5 to 500 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is dark gray fine sandy loam about 6 inches thick. The subsurface layer is gray, mottled sandy loam about 6 inches thick. The subsoil to a depth of about 50 inches is gray, mottled sandy clay loam in the upper and middle parts and is mottled gray, light yellowish brown, and strong brown sandy clay loam in the lower part. The substratum to a depth of about 65 inches is gray, mottled sandy clay loam.

This soil is subject to brief periods of flooding, mainly during the winter and spring. It is characterized by low fertility and high levels of exchangeable aluminum in the root zone 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 very slow rate. A seasonal high water table is at the surface to about 1 foot below the surface from November to April. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Fluker, Latonia, Prentiss, and Stough soils. All of these soils are higher on the landscape than the Myatt soil and have a brownish subsoil. Prentiss and Fluker soils have a fragipan. Included soils make up about 15 percent of the map unit.

Most of the acreage of the Myatt soil is used as woodland. A few areas are used as pasture.

This soil is moderately well suited to woodland. The main limitations for producing and harvesting timber are the restricted use of equipment, the hazard of soil compaction, and the seedling mortality caused by wetness and flooding. Plant competition is severe. Suitable trees to plant are loblolly pine, slash pine, water oak, Shumard oak, and sweetgum. The hazard of soil compaction can be reduced by using equipment only when the soil is dry. After harvesting, reforestation can be carefully managed to reduce competition from undesirable understory plants. Bedding and surface drainage can improve the seedling survival rate.

This soil is poorly suited to crops and pasture. The main limitations are wetness, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. Flooding is a major hazard. Wetness and flooding limit the choice of pasture plants and the period of grazing. They also limit the choice of crops to those that must be planted late and are early maturing, such as soybeans and grain sorghum. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is not suited to urban or intensive recreational uses. The flooding and the wetness are generally too severe for these uses. Protection from flooding is needed before areas of this soil can be used for building sites and sanitary facilities. Levees and ditches, which divert floodwater, can protect buildings and onsite sewage disposal systems from flooding. Roads and streets should be located above the expected flood level.

This soil is moderately well suited as habitat for woodland and openland wildlife and is well suited as habitat for wetland wildlife. Habitat for wildlife can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Fruit-producing trees, such as oaks, provide food for white-tailed deer, squirrels, and turkeys. Constructing shallow ponds provides areas of open water for waterfowl and furbearers and improves the habitat for wetland wildlife.

This Myatt soil is in capability subclass Vw. The woodland ordination symbol is 9W.

OB—Ouachita, Bibb, and Jena soils, frequently flooded. These nearly level, well drained and poorly drained soils are on the flood plains along the major streams. Areas are large, up to several thousand acres in size. Most of the mapped areas contain all of the soils, but some areas contain only one or two. In mapped areas that contain all of the soils, the Ouachita and Jena soils are on low convex ridges and the Bibb soil is in swales and low positions between ridges. The texture of the surface layer changes as floodwater reworks the deposits. The mapped areas contain about 40 percent Ouachita soils, 30 percent Bibb soils, and 20 percent Jena soils. Fewer observations were made in these areas than in most other areas. The detail in mapping, however, is adequate for the expected uses of the soils. Slopes are less than 2 percent.

Typically, the well drained Ouachita soil has a surface layer of brown silt loam about 4 inches thick. The next layer is dark yellowish brown silt loam about 10 inches thick. The subsoil to a depth of about 65 inches is yellowish brown silty clay loam in the upper part; dark yellowish brown, mottled silty clay loam in the next part; and yellowish brown, mottled loam in the lower part.

The Ouachita soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderately slow rate. Water runs slowly off the surface. The soil is subject to brief to long periods of flooding, mainly in the winter and spring. The shrink-swell potential is low.

Typically, the poorly drained Bibb soil has a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The next layer is dark gray fine sandy loam about 13 inches thick. The underlying material to a depth of about 65 inches is gray sandy loam in the upper part and light gray, mottled sandy loam in the lower part.

The Bibb soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs very slowly off the surface. The soil is subject to brief to long periods of flooding, mainly in the winter and spring. A seasonal high water table ranges from 0.5 foot to 1.5 feet below the surface from December through April. The shrink-swell potential is low.

Typically, the well drained Jena soil has a brown fine sandy loam surface layer about 8 inches thick. The subsoil to a depth of about 37 inches is brownish yellow, mottled loam in the upper part and yellowish brown, mottled sandy loam in the lower part. The substratum to a depth of about 60 inches is light yellowish brown, mottled loamy fine sand.

The Jena 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 medium rate. The soil is subject to brief to long periods of flooding, mainly in the winter and spring. The shrink-swell potential is low.

Included with these soils in mapping are a few small areas of Arkabutla, Cahaba, Fluker, Myatt, Rosebloom, and Stough soils. The somewhat poorly drained Arkabutla soils are in intermediate positions between the Bibb soil and the Ouachita and Jena soils. They contain more silt and clay in the subsoil than the Bibb and Jena soils. Cahaba, Fluker, Myatt, and Stough soils are on nearby stream terraces and have a more strongly developed subsoil than the Ouachita, Bibb, and Jena soils. Rosebloom soils are in landscape positions similar to those of the Bibb soil. They contain less sand and more clay in the subsoil than the Bibb soil. Also included in intermediate positions are a few small areas of soils that are similar to the Ouachita soil except that they have a seasonal high water table about 3 to 6 feet below the surface. Included soils make up about 10 percent of the map unit.

Most areas of this map unit are used as woodland (fig. 5). A few areas are used for pasture.

These soils are moderately well suited to woodland. Suitable trees to plant are loblolly pine, slash pine, water oak, sweetgum, Nuttall oak, willow oak, and cherrybark oak. The main concerns for producing and harvesting timber are the severe equipment use limitation and the moderate or severe seedling mortality caused by wetness and flooding. Plant competition is severe, and the soils are subject to compaction when they are moist and heavy equipment is used. Conventional methods of harvesting timber generally can be used, but their use may be limited during rainy periods, which are generally from December to May. Harvesting only during the dry periods reduces rutting and compaction. Bedding and surface drainage can improve the seedling survival rate.

These soils are poorly suited to pasture. The main limitations are wetness and low fertility. Flooding is the main hazard. The main suitable pasture plants are common bermudagrass and vetch. The use of equipment is limited by wetness. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. During periods of flooding, cattle must be moved to adjacent protected areas or to pastures at higher elevations. Applications of fertilizer are generally not feasible because of the frequent overflow.

These soils are poorly suited to crops. The main limitations are wetness, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. Flooding is the main hazard. Crops that are planted late and are early maturing can be successfully grown in some years. Drainage and protection from flooding are possible, but they require major structures, such as levees.

These soils are well suited or moderately well suited as habitat for woodland wildlife and are moderately well suited as habitat for openland wildlife. Bibb soils also are well suited as habitat for wetland wildlife. The habitat for wildlife can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of

Figure 5.—An area of Ouachita, Bibb, and Jena soils, frequently flooded. Most areas of these soils are used for growing pine and hardwood trees.

desirable plants. Preserving existing oak and beech trees helps to maintain the habitat for white-tailed deer, turkeys, and squirrels.

These soils are not suited to urban uses and intensive recreational areas. The hazard of flooding is generally too severe for these uses. Protection from flooding is possible only by constructing large flood-control structures, such as levees.

The soils in this map unit are in capability subclass Vw. The woodland symbol is 11W for the Ouachita soil and is 9W for the Bibb and Jena soils.

Pg—Pits. This map unit consists of gravel pits, sand pits, and borrow pits (fig. 6). Areas range from 5 to 100 acres in size.

Gravel pits are open excavations from which gravel has been mined. The largest areas of Pits are on stream terraces along the flood plains of major drainageways. Sand pits are areas from which sand has been removed. Borrow pits are areas from which soil material has been removed for use in the construction of roads and in the development of commercial and residential sites.

Pits require major reclamation efforts before they can be used for crops or pasture. Pine trees can be planted to protect the soil against erosion, but they grow slowly because of the low fertility and low available water capacity. A few small areas are partially covered with young pine trees and shrubs.

Pr—Prentiss fine sandy loam, 0 to 1 percent slopes. This level, moderately well drained soil has a fragipan. It is on low ridges on stream terraces. Areas range from about 5 to 200 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil to a depth of about 29 inches is yellowish brown, mottled sandy loam and loam. Below this to a depth of about 62 inches is a fragipan. It is mottled yellowish brown, pale brown, light brownish gray, and strong brown loam in the upper part and is mottled yellowish brown, light gray, strong brown, and light yellowish brown sandy loam in the lower part.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through the upper part of this soil at a moderate rate and through the lower part at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is perched above the fragipan, at a depth of 2 to 2.5 feet below the surface, from January through March. The shrink-swell potential is low. The rooting depth and available water capacity are limited by the fragipan.

Included with this soil in mapping are a few small areas of Abita, Bassfield, Cahaba, Fluker, Latonia, Myatt, and Stough soils. None of these soils, except for Fluker soils, has a fragipan. Fluker soils contain more

Figure 6.—Areas of Pits provide sand, gravel, and loamy soil material for use in construction.

clay and less sand in the upper part of the subsoil than the Prentiss soil. The somewhat poorly drained Abita soils are slightly lower on the landscape than the Prentiss soil, and the well drained Bassfield, Cahaba, and Latonia soils are in higher positions. The somewhat poorly drained Fluker and Stough soils are on broad flats. The poorly drained Myatt soils are on broad flats and in depressions. Also included are a few large areas of urban land and a few small areas of Prentiss soils near major drainageways that are subject to rare flooding. Included soils make up about 5 percent of the map unit.

Most of the acreage of the Prentiss soil is used as woodland. A small acreage is used as commercial or residential sites.

This soil is well suited to woodland and has few limitations for this use. Suitable trees to plant are loblolly pine and slash pine. Plant competition is moderate, and the soil is subject to compaction if it is moist and heavy equipment is used. The low or moderate available water capacity and the restricted rooting depth can influence the survival of seedlings in areas that have numerous understory plants. Planting and harvesting trees when the soil is dry reduces the hazard of soil compaction. Conventional methods of harvesting timber generally can be used, but their use may be limited during rainy periods, which are generally from January to March. Site preparation controls the initial plant competition, and spraying controls the subsequent growth.

This soil is well suited to pasture. The main limitations are seasonal wetness, low fertility, restricted rooting depth, and soil droughtiness in late summer. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ball clover, crimson clover, wheat, oats, and ryegrass. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum production of forage.

This soil is moderately well suited to crops. The main limitations are seasonal wetness, low fertility, potentially toxic levels of exchangeable aluminum in the root zone, restricted rooting depth, and soil droughtiness in late summer. Suitable crops are soybeans, corn, cotton, grain sorghum, and vegetables. Proper row arrangement, field ditches, and suitable outlets are needed to remove the excess surface water. Conservation tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility, conserve moisture, and help to maintain soil tilth and the content of organic matter. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is moderately well suited to urban uses. The main limitations are wetness and moderately slow permeability. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. The excess water can be removed by using shallow ditches and providing the proper grade. Septic tank absorption fields do not function properly during rainy periods because of the wetness and moderately slow permeability. Self-contained sewage disposal systems can be used to dispose of sewage properly. Irrigation during the summer can improve the survival of lawn grasses and ornamental plants.

This soil is moderately well suited to intensive recreational uses. The main limitations are the wetness and moderately slow permeability. Good drainage should be provided for most recreational uses. The excess water can be removed by using shallow ditches or providing the proper grade. Mulching, applying fertilizer, and irrigating are necessary to establish lawn grasses and other small-seeded plants.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for rabbits, quail, doves, and nongame birds can be provided by leaving small, vegetated areas around the borders of fields. Habitat for white-tailed deer and turkey can be improved by encouraging the growth of oaks and other mast-producing trees. Prescribed burning also encourages the growth of palatable browse for white-tailed deer and the growth of seed-producing plants for quail and turkey.

This Prentiss soil is in capability subclass IIw. The woodland ordination symbol is 9A.

Ps—Prentiss fine sandy loam, 1 to 3 percent slopes. This very gently sloping, moderately well drained soil is on ridges on stream terraces. Areas range from about 5 to 200 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 5 inches thick. The subsoil to a depth of about 23 inches is yellowish brown, mottled loam in the upper part and brownish yellow, mottled loam in the lower part. The next layer to a depth of about 60 inches is a fragipan. It is mottled brownish yellow and gray loam.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through the upper part of this soil at a moderate rate and through the lower part at a moderately slow rate. Water runs off the surface at a medium rate. Water is perched above the fragipan, at a depth of 2 to 2.5 feet below the surface, from January through March. The rooting depth is restricted by the fragipan. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Abita, Bassfield, Cahaba, Fluker, Latonia, Myatt, and Stough soils. None of these soils, except for Fluker soils, has a fragipan. Fluker soils contain more clay and less sand in the upper part of the subsoil than the Prentiss soil. The somewhat poorly drained Abita soils are slightly lower on the landscape than the Prentiss soil, and the well drained Bassfield, Cahaba, and Latonia soils are in higher positions. The somewhat poorly drained Fluker and Stough soils are on broad flats. The poorly drained Myatt soils are on broad flats and in depressions. Also included are a few large areas of urban land and a few small areas of Prentiss soils near major drainageways that are subject to rare flooding. Included soils make up about 5 percent of the map unit.

Most of the acreage of the Prentiss soil is used as woodland. A small acreage is used as commercial or residential sites.

This soil is well suited to woodland and has few limitations for this use. Suitable trees to plant are loblolly pine and slash pine. Plant competition is moderate, and soil compaction can be a problem if equipment is used when the soil is moist or wet. The low or moderate available capacity and the restricted rooting depth can influence the survival of seedlings in areas that have numerous understory plants. Conventional methods of harvesting timber generally can be used, but their use may be limited during rainy periods, generally from January to March. Competing vegetation can be controlled by proper site preparation. Spraying, cutting, or girdling eliminates unwanted weeds, brush, or trees. Prescribed burning also helps to control unwanted vegetation.

This soil is well suited to pasture. The main limitations are slope, seasonal wetness, low fertility, restricted rooting depth, and soil droughtiness in summer. Grazing when the soil is wet results in the compaction of the surface layer, poor tilth, and excessive runoff. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ball clover, crimson clover, and ryegrass. A seedbed should be prepared on the contour to help control erosion. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum production of forage.

This soil is moderately well suited to crops. The main limitations are slope, seasonal wetness, low fertility, potentially toxic levels of exchangeable aluminum in the root zone, restricted rooting depth, and soil droughtiness in summer. Suitable crops are soybeans, corn, cotton, grain sorghum, and vegetables. The hazard of sheet and rill erosion on the steeper slopes can be reduced by using gradient terraces and contour farming. Proper row arrangement, field ditches, and suitable outlets are needed to remove the excess surface water. Conservation tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility, help to maintain soil tilth and the content of organic matter, and help to control erosion. Crops respond well to applications of fertilizer and lime, which improve fertility and reduce the level of exchangeable aluminum. In areas that have suitable water available, supplemental irrigation can prevent crop damage during dry periods.

This soil is moderately well suited to urban uses. The main limitations are wetness and moderately slow permeability. The hazard of erosion is increased if the soil is left exposed during site development. The excess water can be removed by using shallow ditches and by providing the proper grade. Septic tank absorption fields do not function properly during rainy periods because of the wetness and moderately slow permeability. Self-contained disposal units can be used to dispose of sewage properly. Mulching, applying fertilizer, and irrigating are necessary to establish lawn grasses and ornamentals.

This soil is moderately well suited to intensive recreational uses. The main limitations are wetness and moderately slow permeability. The slope is a limitation for playgrounds. Good drainage should be provided for intensively used areas, such as camp areas and playgrounds. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by applying fertilizer, irrigating, and controlling traffic.

This soil is well suited as habitat for woodland and openland wildlife. Habitat for wildlife can be improved by planting or encouraging the growth of appropriate vegetation. Preserving oak trees during timber harvesting helps to maintain a supply of food for white-tailed deer, squirrel, and turkey. Prescribed burning helps to promote the growth of palatable browse for deer and the growth of seed-producing plants for quail and turkey.

This Prentiss soil is in capability subclass IIe. The woodland ordination symbol is 9A.

Rs—Ruston fine sandy loam, 1 to 3 percent slopes. This very gently sloping, well drained soil is on ridgetops in the uplands. Areas range from about 5 to 150 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsurface layer is yellowish brown sandy loam about 10 inches thick. The subsoil to a depth of about 65 inches is yellowish red loam in the upper part, yellowish red sandy loam in the next part, yellowish red and yellowish brown sandy loam in the following part, and red sandy clay loam in the lower part. In areas, the surface layer is loamy fine sand.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone 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.

Included with this soil in mapping are a few small areas of Angie, Savannah, Smithdale, and Tangi soils. Angie, Savannah, and Tangi soils have less convex slopes than the Ruston soil. Angie soils have a loamy and clayey subsoil, and Savannah and Tangi soils have a fragipan. Smithdale soils are on steeper side slopes than the Ruston soil. They have a subsoil that does not have a bisequum. Included soils make up about 5 percent of the map unit.

Most of the acreage of the Ruston soil is used for pasture. A few areas are used as homesites or woodland.

This soil is well suited to woodland, and it has few limitations for use and management. Suitable trees to plant are loblolly pine, slash pine, and longleaf pine. Soil compaction can be a problem if standard wheeled equipment is used when the surface is moist or wet.

This soil is well suited to pasture. The main limitations are slope and low fertility. A seedbed should be prepared on the contour or across the slope where practical. Proper grazing management, weed control, and applications of fertilizer are needed for the maximum quality of forage. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, ball clover, and crimson clover.

This soil is moderately well suited to cultivated crops. The main limitations are slope, high levels of exchangeable aluminum in the root zone, and low fertility. The main suitable crops are soybeans, corn, grain sorghum, cotton, and vegetables. This soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Practices that can be used to control erosion include early-fall seeding, conservation tillage, and the construction of terraces, diversions, and grassed waterways. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum in the root zone.

This soil is well suited to urban uses. The main limitations are moderate permeability and low strength on sites for roads. The hazard of erosion is increased if the soil is left exposed during site development. Revegetating disturbed areas around construction sites as soon as possible helps to control soil erosion. The design of roads can offset the limited ability of the soil to support a load. The moderate permeability in the subsoil is a limitation for the performance of septic tank absorption fields, but it can be overcome by increasing the length of the septic tank absorption lines.

This soil is well suited to intensive recreational uses. Few limitations affect these uses. The slope is a limitation for playgrounds. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by applying fertilizer and controlling traffic.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for openland wildlife can be improved by providing vegetated areas near fields. Habitat for woodland wildlife can be improved by encouraging the growth of oak and other mast-producing trees. Providing small open areas in forests and using prescribed burning promote the growth of understory plants suitable for wildlife food and cover.

This Ruston soil is in capability subclass IIe. The woodland ordination symbol is 9A.

Rt—Ruston fine sandy loam, 3 to 8 percent slopes. This gently sloping to moderately sloping, well drained soil is on ridgetops and side slopes in the uplands. Areas range from about 5 to 150 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 5 inches thick. The subsurface layer is yellowish brown fine sandy loam about 12 inches thick. The subsoil to a depth of about 64 inches is yellowish red sandy clay loam in the upper part; strong brown, mottled sandy loam in the next part; and red sandy clay loam in the lower part. In some eroded areas, the surface layer is less than 3 inches thick.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone 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 shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Angie, Savannah, Smithdale, and Tangi soils. Angie, Savannah, and Tangi soils have less convex slopes than the Ruston soil. Angie soils have a loamy and clayey subsoil. Savannah and Tangi soils have a fragipan. Smithdale soils are on steeper side slopes.

They have a subsoil that does not have a bisequum. Included soils make up about 10 percent of the map unit.

Most of the acreage of the Ruston soil is used as woodland. A few areas are used for pasture or as homesites.

This soil is well suited to woodland, and it has few limitations for use and management. Soil compaction can occur if standard wheeled equipment is used when the surface is moist. Suitable trees to plant are loblolly pine, slash pine, and longleaf pine.

This soil is moderately well suited to crops. The main limitations are slope, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. The main suitable crops are corn, cotton, 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. It dries quickly after rains. Conservation practices, such as properly managing crop residue, stripcropping, contour farming, conservation tillage, and terracing, reduce the loss of soil by erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is well suited to pasture. The main limitations are slope and low fertility. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, ball clover, and crimson clover. A seedbed should be prepared on the contour or across the slope where practical. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to urban uses. The main limitations are slope, moderate permeability, and low strength on sites for roads and streets. Septic tank absorption fields can be enlarged to offset the moderate permeability. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion. The design of roads can offset the limited ability of the soil to support a load.

This soil is well suited to intensive recreational uses. The main limitation is the slope. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by applying fertilizer and controlling traffic.

This soil is well suited as habitat for openland and woodland wildlife. Areas of openland provide habitat for rabbits, doves, quail, and many nongame species. These areas can be improved for wildlife habitat by planting appropriate vegetation in small plots. Habitat for white-tailed deer, turkey, quail, and squirrel can be improved by encouraging the growth of oaks and other mast-producing trees.

This Ruston soil is in capability subclass IIIe. The woodland ordination symbol is 9A.

Sa—Savannah fine sandy loam, 1 to 3 percent slopes. This moderately well drained, very gently sloping soil is on ridgetops and side slopes in the uplands. Areas range from about 5 to 500 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 5 inches thick. The subsurface layer is pale brown fine sandy loam about 6 inches thick. The subsoil to a depth of about 23 inches is yellowish brown, mottled clay loam. The next layer to a depth of about 62 inches is a fragipan. It is mottled in shades of brown, yellow, and red throughout. It is clay loam in the upper part and sandy clay loam in the lower part.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through the upper part of the soil at a moderate rate and through the fragipan at a moderately slow rate. Water runs off the surface at a medium rate. The soil dries quickly after rains. A seasonal high water table is perched above the fragipan, at a depth of about 1.5 to 3.0 feet below the surface, from January through March. The rooting depth is restricted by the fragipan. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Angie, Fluker, Ruston, Smithdale, and Tangi soils. Angie and Tangi soils are in landscape positions similar to those of the Savannah soil, and they have a loamy and clayey subsoil. Angie soils do not have a fragipan. The somewhat poorly drained Fluker soils are in depressions and have grayish mottles in the upper part of the subsoil. The well drained Ruston soils have more convex slopes than the Savannah soil, and the well drained Smithdale soils are on steeper side slopes. Ruston and Smithdale soils do not have a fragipan. Included soils make up about 10 percent of the map unit.

Most of the acreage of the Savannah soil is used as pasture (fig. 7). A few areas are used as woodland, cropland, or homesites.

This soil is moderately well suited to woodland. The main limitations are the restricted use of equipment and the hazard of soil compaction caused by wetness (fig. 8). Plant competition is moderate, and rooting depth is restricted by the fragipan. Site preparation and harvesting activities should be undertaken only when the surface is dry to prevent soil compaction. Site preparation controls the initial growth of unwanted understory plants, and spraying controls the subsequent growth. Suitable trees to plant are loblolly pine, slash pine, sweetgum, cherrybark oak, water oak, and Shumard oak.

Figure 7.—An area of Savannah fine sandy loam, 1 to 3 percent slopes. This soil is well suited to pasture.

This soil is well suited to pasture. The main limitation is low fertility. The slope and the restricted rooting depth are minor limitations. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, ball clover, and crimson clover. Seedbed preparation should be done on the contour or across the slope to help control erosion. Appliations of fertilizer and lime are needed for optimum forage production.

This soil is moderately well suited to crops. The main limitations are slope, low fertility, restricted rooting depth, and potentially toxic levels of exchangeable aluminum in the root zone. Suitable crops are soybeans, corn, grain sorghum, and vegetables. Practices that help to control erosion include early-fall seeding, conservation tillage, proper row arrangement, and the construction of terraces, diversions, and grassed waterways. Maintaining crop residue on or near the surface helps to control runoff and maintain soil tilth and the content of organic matter. Crops respond well to applications of fertilizer and lime, which improve fertility and reduce the level of exchangeable aluminum in the root zone.

This soil is moderately well suited to urban uses. The main limitations are wetness, moderately slow permeability, and low strength on sites for roads and streets. The hazard of erosion is increased if the soil is left exposed during site development. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. The excess surface water can be removed by using shallow ditches and by providing the proper grade. Maintaining the existing plant cover or revegetating disturbed areas around construction sites as soon as possible helps to control soil erosion. The design of roads can offset the limited ability of the soil to support a load. The moderately 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 properly.

This soil is moderately well suited to intensive recreational uses. The main limitations are wetness and moderately slow permeability. Slope is an additional limitation for playgrounds. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic. Constructing ditches or providing the proper grade can remove the excess surface water and improve the soil for intensively used recreational areas.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for doves, rabbits, and nongame birds and animals can be improved by providing small undisturbed and vegetated areas near cropland. Habitat for white-tailed deer, turkeys, and squirrels can be improved by encouraging the growth of oaks and other mast-producing trees. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and seed-producing plants for quail and turkey.

Figure 8.—Pine woodland in an area of Savannah fine sandy loam, 1 to 3 percent slopes. This soil is moderately well suited to woodland. The wetness restricts the use of equipment for short periods.

This Savannah soil is in capability subclass IIe. The woodland ordination symbol is 9W.

Sh—Savannah fine sandy loam, 3 to 8 percent slopes. This gently sloping to moderately sloping, moderately well drained soil is on ridgetops and side slopes in the uplands. Areas range from about 5 to 500 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 7 inches thick. The subsoil to a depth of about 23 inches is yellowish brown loam. The next layer to a depth of about 60 inches is a fragipan. It is sandy clay loam and is mottled in shades of brown, yellow, and red. In some areas, the surface layer is loamy fine sand and the subsoil is reddish in the upper part. In other areas, the soil is eroded and the surface layer is less than 3 inches thick.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through the upper part of this soil at a moderate rate and through the lower part at a moderately slow rate. Water runs off the surface at a medium rate. The surface layer of this soil dries quickly after rains. A seasonal high water table is perched above the fragipan, at a depth of about 1.5 to 3.0 feet below the surface, from January through March. The rooting depth is restricted by the fragipan. The shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Angie, Fluker, Ruston, Smithdale, and Tangi soils. Angie and Tangi soils are in landscape positions similar to those of the Savannah soil and have a loamy and clayey subsoil. Angie soils do not have a fragipan. The somewhat poorly drained Fluker soils are in depressions and have grayish mottles in the upper part of the subsoil. The well drained Ruston soils have more convex slopes than the Savannah soil, and the well drained Smithdale soils are on steeper side slopes. Ruston and Smithdale soils do not have a fragipan. Included soils make up about 5 percent of the map unit.

Most of the acreage of the Savannah soil is used as pasture or woodland. A few areas are used as cropland or homesites.

This soil is moderately well suited to woodland. The main limitations are the restricted use of equipment and the hazard of soil compaction caused by wetness. Plant competition is moderate, and rooting depth is restricted by the fragipan. Suitable trees to plant are loblolly pine, slash pine, sweetgum, cherrybark oak, water oak, and Shumard oak. Planting and harvesting activities should be undertaken when the surface is dry to prevent soil compaction. Site preparation controls the initial growth of undesirable understory plants. Spraying, cutting, girdling, and prescribed burning control the subsequent growth.

This soil is well suited to pasture. The main limitations are slope and low fertility. The rooting depth is restricted by the fragipan. The main suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, ryegrass, wheat, ball clover, and crimson clover. A seedbed should be prepared on the contour or across the slope if possible to prevent excessive erosion. Applications of fertilizer and lime are needed for the optimum forage production.

This soil is moderately well suited to crops. The main limitations are low fertility, slope, restricted rooting depth, and potentially toxic levels of exchangeable aluminum in the root zone. Suitable crops are soybeans, corn, 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. Practices that help to control erosion include early-fall seeding, conservation tillage, proper row arrangement, and the construction of terraces, diversions, and grassed waterways. Crop residue left on or near the surface helps to conserve moisture, maintain tilth, and control erosion. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is moderately well suited to urban uses. The main limitations are the moderately slow permeability, wetness, low strength on sites for roads and streets, and the slope. Septic tank absorption fields do not function properly during rainy periods because of wetness and the moderately slow permeability. A seasonal high water table is perched above the fragipan, and drainage is needed where buildings are constructed. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion. The design of roads can offset the limited ability of the soil to control a load. Sewage lagoons or self-contained sewage disposal units can be used to dispose of sewage properly.

This soil is moderately well suited to intensive recreational uses. The main limitations are slope, wetness, and moderately slow permeability. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. Using shallow ditches and providing the proper grade can remove the excess water and improve this soil for use as a site for playgrounds and camp areas.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for white-tailed deer, quail, squirrels, and turkeys can be improved by encouraging the growth of oaks and other mast-producing trees. Habitat for doves, rabbits, and nongame birds and animals can be created or improved by planting or encouraging the growth of appropriate vegetation.

This Savannah soil is in capability subclass IIIe. The woodland ordination symbol is 9W.

Sm—Smithdale fine sandy loam, 8 to 12 percent slopes. This strongly sloping, well drained soil is on side slopes in the uplands. Areas range from about 5 to 100 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The subsurface layer is yellowish brown sandy loam about 8 inches thick. The subsoil to a depth of about 70 inches 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 areas, the surface layer is loamy fine sand. In other areas, most of the surface layer has been lost to erosion.

This soil is characterized by low fertility and moderately high levels of exchangeable aluminum in the root zone 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 shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Angie, Ruston, Savannah, and Tangi soils. All of these soils are less sloping than the Smithdale soil. Angie and Tangi soils have a loamy and clayey subsoil. Tangi soils have a fragipan. Ruston soils have a subsoil that has a bisequum. Savannah soils have a fragipan. Included soils make up about 15 percent of the map unit.

Most of the acreage of the Smithdale soil is used as woodland. A few areas are used as homesites or for pasture.

This soil is well suited to woodland and has few limitations for this use. Road cuts and landings can be seeded to permanent plant cover to reduce the hazard of erosion.

This soil is moderately well suited to pasture. The main limitation is the slope (fig. 9). The low fertility is a minor limitation. Suitable pasture plants include common bermudagrass, improved bermudagrass, bahiagrass, red clover, and vetch. Management practices that maintain a good vegetative cover are needed to prevent gullying. Applications of fertilizer and lime are needed for the optimum production of forage.

This soil is poorly suited to cultivated crops. The hazard of erosion is severe. The soil is characterized by low fertility and potentially toxic levels of exchangeable aluminum in the root zone. Small grains are better suited to this soil than row crops. Practices that help to control erosion include early-fall seeding, conservation tillage, and the construction of terraces, diversions, and grassed waterways. Most crops respond well to applications of fertilizer and lime, which improve fertility and reduce the level of exchangeable aluminum in the root zone.

This soil is moderately well suited to urban uses. The main limitation is the slope. Seepage can be a hazard for sewage lagoons and sanitary landfills. Erosion is a hazard. Only the part of the site that is used for construction should be disturbed. Revegetating disturbed areas around construction sites as soon as possible helps to control soil erosion. The steepness of slope is a management concern for installing septic tank absorption fields. Unless absorption lines are installed on the contour, effluent from absorption fields can surface in downslope areas and create a health hazard. The bottom and sides of sewage lagoons and sanitary landfills can be sealed with an impervious material to prevent seepage of effluent and contamination of nearby groundwater supplies.

This soil is moderately well suited to intensive recreational uses. The main limitation is the slope. Paths and trails should extend across the slope. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for doves, rabbits, and nongame birds and animals can be improved by planting or encouraging the growth of appropriate vegetation near cropland. Habitat for white-tailed deer, quail, turkeys, and squirrels can be improved by encouraging the growth of oak trees and by providing open areas to encourage the growth of understory plants. Prescribed burning also encourages the growth of palatable browse for deer and the growth of seed-producing plants for quail and turkeys.

This Smithdale soil is in capability subclass IVe. The woodland ordination symbol is 9A.

Sn—Smithdale fine sandy loam, 12 to 20 percent slopes. This moderately steep, well drained soil is on side slopes in the uplands. Areas range from about 5 to 100 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer is grayish brown sandy loam about 9 inches thick. The subsoil to a depth of about 60 inches is yellowish red sandy clay loam in the upper part; red, mottled sandy clay loam in the next part; and red sandy loam in the lower part. In areas, most of the surface layer has been lost to erosion.

This soil is characterized by low fertility and moderately high levels of exchangeable aluminum in the

Figure 9.—A pastured area of Smithdale fine sandy loam, 8 to 12 percent slopes. Slope is the main limitation for pasture. Terraces, which were installed when this area was used for crops, help to control runoff and erosion.

root zone 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 shrink-swell potential is low.

Included with this soil in mapping are a few small areas of Angie, Ruston, Savannah, and Tangi soils. All of these soils are less sloping than the Smithdale soil. Angie and Tangi soils have a loamy and clayey subsoil. Tangi and Savannah soils have a fragipan. Ruston soils have a subsoil that has a bisequum. Also included are small areas of Smithdale soils that have slopes of 20 to 45 percent. Included soils make up about 15 percent of the map unit.

Most of the acreage of the Smithdale soil is used as woodland. A few areas are used as homesites or for pasture.

This soil is moderately well suited to woodland. Slope is the main limitation. Suitable trees to plant are loblolly pine, longleaf pine, and slash pine. Management practices that minimize the hazard of erosion are essential in harvesting timber. Road cuts and landings should to be seeded to permanent plant cover to reduce the hazard of erosion. Logging trails should be on the contour where possible. Rills and gullies can develop on yarding paths, skid trails, and firebreaks unless adequate water bars, plant cover, or both are provided.

This soil is moderately well suited to pasture. The main limitations are the slope and low fertility. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, and red clover. Management practices that maintain a good vegetative cover are needed to prevent gullying. Applications of fertilizer and lime are needed for the optimum production of forage.

This soil is generally not suited to cultivated crops. The slopes are too steep and the hazard of erosion is too severe for this use. Other limitations are the low fertility and high levels of exchangeable aluminum that are potentially toxic to crops.

This soil is poorly suited to urban uses mainly because of the moderately steep slope. Erosion is a hazard. Only the part of the site that is used for construction should be disturbed. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion. The slope is a management concern for installing septic tank absorption fields. Unless absorption lines are installed on the contour, effluent from absorption fields can surface in downslope areas and create a health hazard.

This soil is poorly suited to intensive recreational uses. The main limitation is the slope. Paths and trails should extend across the slope. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic.

This soil is well suited as habitat for woodland wildlife and is moderately well suited as habitat for openland wildlife. Habitat for openland wildlife can be improved by planting or encouraging the growth of appropriate vegetation. Habitat for white-tailed deer, squirrels, and turkeys can be improved by encouraging the growth of oak trees and by providing open areas to encourage the growth of understory plants.

This Smithdale soil is in capability subclass VIe. The woodland ordination symbol is 9R.

St—Stough fine sandy loam. This level, somewhat poorly drained soil is on broad flats on stream terraces. Areas range from about 5 to 300 acres in size. Slope is less than 1 percent.

Typically, the surface layer is dark gray fine sandy loam about 4 inches thick. The next layer is mottled pale brown, light yellowish brown, and gray sandy loam about 4 inches thick. The subsoil to a depth of about 64 inches is mottled throughout in shades of brown and gray. It is loam in the upper part, sandy loam in the next part, loam in the following part, and sandy clay loam in the lower part. The brownish material in the middle and lower parts of the soil is very firm and brittle.

This soil is characterized by low fertility and high levels of exchangeable aluminum in the root zone that are potentially toxic to crops. Water and air move through this soil at a moderately slow rate. Water runs slowly off the surface and stands in low areas for short periods after heavy rains. A seasonal high water table ranges from about 1 to 1.5 feet below the surface from January through April. The shrink-swell potential is low.

Included in mapping are a few small areas of Abita, Bassfield, Cahaba, Fluker, Myatt, and Prentiss soils. Abita soils have slightly more convex slopes than the Stough soil, and Fluker soils are in landscape positions similar to those of the Stough soil. Abita and Fluker soils have less sand in the upper part of the subsoil than the Stough soil. Fluker soils have a fragipan. Bassfield and Cahaba soils are in higher positions on the landscape. They are well drained and have a reddish subsoil. Myatt soils are lower on the landscape than the Stough soil. They contain more clay in the subsoil and are grayish throughout the profile. Prentiss soils are slightly higher on the landscape than the Stough soil and have a fragipan. Also included are a few small areas of Stough soils at lower elevations and along major drainageways that are subject to rare flooding and a few large areas of urban land. Included soils and miscellaneous areas make up about 15 percent of the map unit.

Most of the acreage of the Stough soil is used as woodland (fig. 10). A few areas are used as commercial sites, residential sites, or cropland.

This soil is moderately well suited to woodland. The main limitations are the restricted use of equipment and the soil compaction caused by wetness. Suitable trees to plant are loblolly pine, slash pine, cherrybark oak, water oak, and sweetgum. Trees can be planted or harvested during dry periods to reduce the hazard of soil compaction. Conventional methods of harvesting timber can be used, but the use of equipment may be limited by wetness in the winter and spring. Plant competition is severe. After harvesting, reforestation must be carefully managed to reduce the competition from undesirable understory plants.

This soil is moderately well suited to crops. The main limitations are wetness, low fertility, and potentially toxic levels of exchangeable aluminum in the root zone. The main crops grown are soybeans, grain sorghum, corn, and vegetables. A drainage system is needed for most cultivated crops and pasture plants. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is well suited to pasture. The main limitations are wetness and low fertility. Suitable pasture plants include common bermudagrass, improved bermudagrass, bahiagrass, tall fescue, white clover, and vetch. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and

Figure 10.—Pine woodland in an area of Stough fine sandy loam. This soil is only moderately well suited to woodland because of the wetness.

lime are needed for the optimum growth of grasses and legumes.

This soil is poorly suited to urban uses. The main limitations are wetness and moderately slow permeability. Excess water can be removed by using shallow ditches and by providing the proper grade. Septic tank absorption fields do not function properly during rainy periods because of the wetness and moderately slow permeability. Sewage lagoons or self-contained disposal units can be used to dispose of sewage properly.

This soil is moderately well suited to intensive recreational uses. The main limitations are wetness and moderately slow permeability. The excess surface water can be removed by using shallow ditches and providing the proper grade.

This soil is well suited as habitat for openland and woodland wildlife. It is moderately well suited as habitat for wetland wildlife. Small, undisturbed, vegetated areas around fields provide food and cover for doves, rabbits, quail, and many nongame birds and animals. Encouraging the growth of oaks and other mast-producing trees can improve the habitat for white-tailed deer, turkeys, and squirrels. Prescribed burning in wooded areas encourages the growth of palatable browse for deer and the growth of seed-producing plants for quail and turkey.

This Stough soil is in capability subclass 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 ridgetops in the uplands. Individual areas range from about 10 to 2,000 acres in size.

Typically, the surface layer is dark gray silt loam about 7 inches thick. The subsoil to a depth of about 32 inches is yellowish brown silt loam in the upper part and yellowish brown, mottled silt loam in the lower part. The subsoil between a depth of 32 and 67 inches is a fragipan. The upper part of the fragipan is yellowish brown, mottled silty clay loam. The middle and lower parts are strong brown, mottled clay.

Included with this soil in mapping are a few small areas of Fluker, Ruston, Savannah, and Smithdale soils. The somewhat poorly drained Fluker soils are in depressions and have grayish mottles in the upper part of the subsoil. The well drained Ruston soils have more convex slopes than the Tangi soil. They do not have a fragipan. The Savannah soils are in landscape positions similar to those of the Tangi soil. They contain more sand in the upper part of the subsoil and less clay in the fragipan than the Tangi soil. The well drained Smithdale soils are on steeper side slopes and 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 upper part of the soil and very slow in the lower part. 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 soil dries quickly after rains. The effective rooting depth is restricted by the fragipan. The shrink-swell potential is moderate in the subsoil.

Most of the acreage of this soil is used for woodland, pasture, or crops. A few areas are used for homesites or recreational activities.

This soil is well suited to woodland. Suitable trees to plant are loblolly pine and slash pine. This soil has few limitations for woodland management. Competition from understory plants is moderate, and the surface is subject to compaction if heavy equipment is used when the soil is moist. Rooting depth is restricted by the fragipan. After harvesting, reforestation can be carefully managed to reduce competition from undesirable understory plants. Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling, which eliminate unwanted weeds, brush, or trees. Harvesting only during the drier periods reduces the hazard of soil compaction.

This soil is well suited to pasture. The main limitations are the slope and low fertility. The restricted rooting depth is a minor limitation. Erosion is a hazard. The main suitable pasture plants are bahiagrass, common bermudagrass, hybrid 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. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to crops. It is limited mainly by the slope, low fertility, restricted rooting depth, and potentially toxic levels of exchangeable aluminum in the root zone. Soybeans, corn, grain sorghum, and millet are the main crops grown. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Runoff and erosion can be controlled by plowing in the fall, applying fertilizer, and seeding a cover crop. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility, conserve moisture, and help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is moderately well suited to urban development. The main limitations are low strength on sites for roads and streets, moderate shrink-swell potential, very slow permeability, and wetness. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. The excess surface water can be removed by using shallow ditches and providing the proper grade. The hazard of erosion is increased if the surface is left bare during construction. Preserving the existing plant cover during construction or revegetating disturbed areas as soon as possible help to control erosion. Establishing and maintaining the plant cover can be achieved by properly applying fertilizer, seeding, mulching, and shaping the slopes. The design of local roads and streets can offset the limited ability of the soil to support a load. The very 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 properly. Footings and foundations of buildings can be strengthened to withstand the effects of shrinking and swelling.

This soil is moderately well suited to recreational development. It is limited mainly by the wetness and very slow permeability. The slope is an additional limitation for playgrounds. Maintaining a plant cover helps to control erosion. Cuts and fills should be seeded or mulched. The excess surface water can be removed by using shallow ditches and providing the proper grade.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for wildlife can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Prescribed burning encourages the growth of palatable browse for deer and seed-producing plants for quail and turkeys.

This Tangi soil is in capacity subclass IIe. The woodland ordination symbol is 13A.

Tg—Tangi silt loam, 3 to 8 percent slopes. This gently sloping to moderately sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from about 10 to 2,000 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsoil to a depth of about 37 inches is strong brown silt loam in the upper part; mottled, yellowish brown and dark brown silty clay loam in the next part; and mottled, yellowish brown and light brownish gray silty clay loam in the lower part. The next part of the subsoil is a fragipan. The fragipan to a depth of about 72 inches is red, mottled sandy clay loam.

Included with this soil in mapping are a few small areas of Fluker, Ruston, Savannah, and Smithdale soils. The somewhat poorly drained Fluker soils are in depressions and have grayish mottles in the upper part of the subsoil. The well drained Ruston soils have more convex slopes than the Tangi soil. They do not have a fragipan. Savannah soils are in landscape positions similar to those of the Tangi soil. They contain more sand in the upper part of the subsoil and less clay in the fragipan than the Tangi soil. The well drained Smithdale soils are on steeper side slopes and 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 upper part of the soil and is very slow in the lower part. Water runs off the surface at a medium rate. Water is perched above the fragipan at a depth of about 1.5 feet to 3.0 feet from December through April. The effective rooting depth is restricted by the fragipan. The shrink-swell potential is moderate.

Most of the acreage of this soil is used for woodland, pasture, or crops. A few areas are used for homesites or recreational activities.

This soil is well suited to woodland. Suitable trees to plant are loblolly pine and slash pine. The soil has few limitations for the commercial production of pine trees. Competition from understory plants is moderate, and the surface layer is subject to compaction if heavy equipment is used when the soil is moist. The rooting depth is restricted by the fragipan. After harvesting, reforestation must be carefully managed to reduce competition from undesirable understory plants. Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling, which eliminate unwanted weeds, brush, or trees. Harvesting only during the drier periods reduces the hazard of soil compaction.

This soil is moderately well suited to pasture. The main limitations are the slope and low fertility. The restricted rooting depth is a minor concern. The soil is subject to erosion until the pasture grasses are established. The main 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 where practical. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to cultivated crops. It is limited mainly by the slope, low fertility, restricted rooting depth, and potentially toxic levels of exchangeable aluminum in the root zone. Soybeans, corn, grain sorghum, and millet are the main crops grown. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Practices that help to control erosion include early-fall seeding, conservation tillage, and the construction of terraces, diversions, and grassed waterways. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Crops response to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is moderately well suited to urban development. The main limitations are wetness, slope, very slow permeability, moderate shrink-swell potential, and low strength on sites for roads and streets. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. The hazard of erosion is increased if the surface is left bare. Preserving the existing plant cover during construction or revegetating disturbed areas as soon as possible help to control erosion. Establishing and maintaining the plant cover can be achieved by properly applying fertilizer, seeding, mulching, and shaping the slopes. The design of roads can offset the limited ability of the soil to support a load.

The very slow permeability and the high water table increase the possibility of that septic tank absorption fields will fail. Self-contained sewage disposal units can be used to dispose of sewage properly. Footings and foundations of buildings can be strengthened to withstand the effects of shrinking and swelling.

This soil is moderately well suited to recreational development. It is limited mainly by the wetness and very slow permeability. The slope is an additional limitation for playgrounds. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining an adequate plant cover. Cuts and fills should be seeded or mulched. The excess water can be removed by using shallow ditches.

This soil is well suited as habitat for openland and woodland wildlife. Habitat for wildlife can be improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants. Prescribed burning encourages the growth of palatable browse for deer and seed-producing plants for quail and turkeys.

This Tangi soil is in capability subclass IIIe. The woodland ordination symbol is 13A.

Prime Farmland

In this section, prime farmland is defined, and the soils in Washington Parish that are considered prime farmland are listed.

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 frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent.

The following map units are considered prime farmland in Washington Parish. 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.

The soils identified as prime farmland in Washington Parish are:

Aa	Abita silt loam, 0 to 2 percent slopes
Ab	Abita silt loam, 2 to 5 percent slopes
Ag	Angie silt loam, 1 to 5 percent slopes
Ba	Bassfield sandy loam, 1 to 3 percent slopes
Ca	Cahaba fine sandy loam, 1 to 5 percent slopes
Fk	Fluker silt loam
Lt	Latonia fine sandy loam
Pr	Prentiss fine sandy loam, 0 to 1 percent slopes
Ps	Prentiss fine sandy loam, 1 to 3 percent slopes
Rs	Ruston fine sandy loam, 1 to 3 percent slopes
Rt	Ruston fine sandy loam, 3 to 8 percent slopes
Sa	Savannah fine sandy loam, 1 to 3 percent slopes
Sh	Savannah fine sandy loam, 3 to 8 percent slopes
St	Stough fine sandy loam
Ta	Tangi silt loam, 1 to 3 percent slopes

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 suitability 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 suitability 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

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.

Differences in the suitability of crops and management needs result from differences in soil characteristics, such as fertility levels, erodibility, content of organic matter, availability of water for plants, drainage, and the hazard of flooding. The cropping system and soil tillage also are important aspects of management. Each farm has a unique soil pattern; therefore, each has unique management concerns. Some principles of farm management, however, apply to specific soils and certain crops. This section presents the general management principles that can be applied widely to the soils of Washington Parish.

Perennial grasses or legumes.—Grasses, legumes, or a mixture of the two are grown for pasture and hay. The mixture generally consists of either a summer or winter perennial grass and a suitable legume. Also, many farmers seed small grain or ryegrass in the fall for winter and spring forage. The excess grass in summer is harvested as hay for the winter (fig. 11).

Common and improved bermudagrass and Pensacola bahiagrass are the summer perennials most commonly grown. Improved bermudagrass and Pensacola bahiagrass produce good quality forage. Tall fescue, the main winter perennial grass, grows well only on soils that have a favorable moisture content. All of these grasses respond well to applications of fertilizers, particularly nitrogen.

White clover, crimson clover, vetch, and wild winter peas are the most commonly grown legumes. All of these respond well to applications of lime, particularly those that are growing on acid soils.

Figure 11.—Hay in an area of Ruston fine sandy loam, 3 to 8 percent slopes.

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

Some farmers obtain additional forage by allowing grazing on the understory native plants in areas of woodland. The forage volume varies according to the woodland site, the condition of the native forage, and the density of the timber stand. Although most of the woodland is managed mainly for timber, a substantial volume of forage can be obtained from these areas if they are properly managed. Stocking rates and grazing periods need to be carefully managed for optimum forage production and to maintain an adequate cover of understory plants to control erosion. Additional information on the production of forage in woodland is in the section "Woodland."

Applications of fertilizer and lime.—The soils that are used for crops and pasture range from extremely acid to medium acid in the upper 20 inches. Most of the soils used for crops have a low content of organic matter and available nitrogen. They generally need lime and a complete fertilizer for crops and pasture plants. The amount of fertilizer needed depends upon the kind of crop, on the cropping history, on the yields desired, and on the kind of soil. It should be determined on the basis of soil test results. Information and instructions on collecting and testing soil samples can be obtained from the Cooperative Extension Service.

Organic matter content.—Organic matter is an important source of nitrogen for crop growth. It also increases the rate of water intake, reduces surface crusting, and improves tilth. In Washington Parish, the soils used for crops have a low content of organic matter. The content of organic matter can be maintained or increased by growing crops that produce 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.

Soil tillage.—Conservation tillage can be applied to most of the soils to increase organic matter and improve the overall tilth. The soils should be tilled only enough to prepare a seedbed and to control weeds. Excessive tillage destroys soil structure. A compacted layer, generally known as a traffic pan or plowpan, sometimes develops just below the plow layer in loamy soils. The development of this layer can be avoided by not plowing when the soil is wet, by varying the depth of plowing, or by breaking up the plowpan by subsoiling or chiseling. Tillage implements that stir the surface but that leave the crop residue in place protect the soil from beating rains, thereby helping to control erosion and runoff, increase infiltration, and reduce surface crusting.

Drainage.—Many of the soils in the parish require surface drainage to improve the suitability for crops. Early drainage methods involved a complex pattern of main ditches, lateral ditches, and surface field ditches. More recent drainage methods in the parish involve a combination of land smoothing and a minimum number of surface ditches. Larger and more uniformly shaped fields are thus created, which are more suited to the use of modern, multirow farm machinery. The deep cutting of soils that have unfavorable subsoil characteristics, however, should be avoided.

Erosion control.—Erosion is a major hazard on many of the soils in Washington Parish. It is an especially serious concern on soils on terraces and uplands. Sloping soils, such as Angie, Cahaba, Ruston, and Tangi soils, are highly susceptible to erosion when they are left without a plant cover for extended periods. If the surface layer is lost through soil erosion, most of the available plant nutrients and organic matter also are lost. Soils that have a fragipan, such as Prentiss and Savannah soils, particularly require protection from erosion. Soil erosion also results in the sedimentation of drainage systems and the pollution of streams by sediments, nutrients, and pesticides.

A cropping system in which a plant cover is maintained on the surface for extended periods reduces soil erosion. Legume or grass cover crops help to control erosion, increase the content of organic matter and nitrogen, and improve tilth. Terraces, diversions, grassed waterways, conservation tillage, contour farming, and a cropping system that rotates grass or close-growing crops with row crops help to control erosion on cropland and pasture. Constructing water-control structures in drainageways to drop the water to a different level can help to prevent gullying.

Cropping system.—A good cropping system includes legumes that provide nitrogen, cultivated crops that aid in weed control, deep-rooted crops that utilize subsoil fertility and maintain the permeability of the subsoil, and close-growing crops that help to maintain the content of organic matter. The sequence of the crops should keep the soil covered as much of the year as possible.

A suitable cropping system varies according to the needs of the farmer and the characteristics of the soil. Producers of livestock, for example, generally use a cropping system that has a higher percentage of pasture than does the cropping system of a cash-crop farm.

Additional information about erosion control, cropping systems, and drainage practices can be obtained from the local office of the Natural Resources Conservation Service and the Cooperative Extension Service or from 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 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby 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 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the 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,* or *s,* 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); and *s* shows that the soil is limited mainly because it is droughty.

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 subclass indicated by *w.*

Woodland

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

This section contains information about the relationship between trees and their environment, particularly the soils on which the trees grow. It also includes information about the type, amount, and condition of woodland resources in Washington Parish and includes interpretations that can be used in land use planning.

Soil directly influences the growth, management, harvesting, and use of forests. It is the medium in which a tree is anchored, and it supplies the tree with 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 water-holding capacity than clayey soils. However, aeration is often impeded in clayey soils, particularly under wet conditions.

The soil characteristics, in combination, largely determine the species composition of the forest stand. They also influence management and use decisions. Sweetgum, for example, is tolerant of many types of soils and sites. It grows best, however, on the rich, moist, alluvial loamy soils in areas of bottomland. The use of heavy logging and site-preparation equipment is more restricted on clayey soils than on better drained, sandy or loamy soils.

Woodland Resources

The topography and vegetation of Washington Parish ranges from the sloping pine woods in the uplands and the flat pine woods on terraces and flood plains to the hardwood forests in swamps. The dominant forest species are longleaf pine, slash pine, and loblolly pine in the higher areas; sweetgum, red oak, white oak, elm, pecan, green ash, willow, American sycamore, and eastern cottonwood on the stream and river bottoms;

and baldcypress and tupelo gum in swamps.

Washington Parish was once mainly a vast, virgin pine forest. Presently, no virgin forests are left in the parish. Most of the forests were eliminated during the "cut out-get out" period around the turn of the century. The timber barons during that period stripped both the upland pine and low baldcypress-tupelo gum forests of commercial trees. No attempts at artificial regeneration were made, and the second-growth forests were strictly a product of nature. The second-growth forests were largely unmanaged and were subject to periodic wild fires and harvests. Little or no thought was given to selective cutting or regeneration until the late 1940's and early 1950's, when a series of events set the stage for forest management and reforestation. First, effective fire protection was provided by the Louisiana Office of Forestry (then known as the Louisiana Forestry Commission). The Louisiana Office of Forestry then increased their pine-seedling nursery operations, making pine seedlings readily available for planting in the cut-over land. Finally, timber and land values began to increase, which provided an incentive for landowners to bring the land into production. Presently, most of the forest land in Washington Parish is once again productively growing commercial timber, although a substantial portion of the land is devoted to urban uses, pasture, cropland, and other nonforest uses.

Washington Parish contains about 289,000 acres of commercial woodland, which represents about 67 percent of the total land area in the parish. Commercial woodland is defined as land that is producing or is capable of producing crops of industrial wood and that has not been withdrawn from timber use. The total area of commercial woodland increased by about 18,000 acres between 1964 and 1974. This trend reversed from 1974 to 1984, when 9,900 acres was cleared, mostly for pasture and urban areas. Some other uses include cropland and transmission and transportation corridors. The acreage of woodland in the parish probably will continue to decrease as urban areas increase in size.

About 18 percent of the forest land in Washington Parish is owned by private farms; 20 percent is publicly owned forest land; 30 percent is owned by miscellaneous types of private owners; and 50 percent is owned by private industry *(60, 62)*.

The parish is entirely within the Southern Coastal Plain major land resource area (MLRA). This MLRA supports a substantial acreage of commercial forest. The dominant trees are loblolly and slash pine, and the associated trees are sweetgum, shortleaf pine, longleaf pine, southern red oak, white oak, water oak, post oak, black cherry, elm, and red maple.

Commercial forests in the parish have been divided into forest types. The types are based on tree species, site quality, or age. In this report, a forest type is composed of stands of trees that are of similar character, contain the same species, and are growing under the same ecological and biological conditions. The forest types are named for the dominant trees.

The *oak-gum-cypress* forest type makes up 18 percent of the forest land in Washington Parish. It is composed of bottomland forests that contain tupelo gum, blackgum, sweetgum, oak, and baldcypress. The species can grow singly or in combination. The associated trees include eastern cottonwood, black willow, green ash, hackberry, maple, and elm.

The *loblolly-shortleaf* pine forest type makes up 32 percent of the forest land in the parish. Loblolly pine generally is dominant, except in drier areas. Scattered areas of hardwoods, such as sweetgum, blackgum, southern red oak, post oak, white oak, mockernut hickory, and pignut hickory, are mixed with the pine in areas of well drained soils. On most of the moist sites, however, sweetgum, red maple, water oak, and willow oak are mixed with the pine. 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 makes up 30 percent of the forest in the parish. This forest type contains upland oak or hickory, either singly or in combination, except in areas where pines make up 25 to 50 percent of the stand and the stand is classified as oak-pine. The common associated trees include elm and maple.

The *longleaf-slash pine* type makes up 2 percent of the forest land in the parish. This forest type contains longleaf pine or slash pine, either singly or in combination, in 50 percent or more of the stand. The common associated trees include other types of southern pine, oak, and tupelo gum.

The *oak-pine* forest type makes up about 18 percent of the forest land in the parish. About 50 to 75 percent of the stand is hardwoods, usually upland oak, and 25 to 50 percent of the stand is softwoods, except baldcypress. The species that make up the oak-pine forest type are primarily the result of soil, slope, and aspect. On the higher, drier sites the hardwood species tend to be upland oaks, such as post oak, southern red oak, and blackjack oak. On the more moist and fertile sites, the species are white oak, southern red oak, and black oak. Blackgum, winged elm, red maple, and various species of hickory are associated with the oak-pine type in both of these broad site classifications.

The forest land in Washington Parish, by physiographic class, is composed of 43 percent pine and 57 percent bottomland hardwoods.

The volume of marketable timber is about 55 percent pine, 42 percent hardwoods, and 3 percent other types of trees. About 36 percent of the forest acreage supports sawtimber, 20 percent supports pole timber, and 44 percent supports saplings and seedlings. About 4 percent of the commercial forest land in Washington Parish is classified as "non-stocked."

About 6 percent of the forest land produces 165 cubic feet or more of wood per acre per year. About 14 percent produces 120 to 165 cubic feet; 30 percent produces 85 to 120 cubic feet; and 50 percent produces 50 to 85 cubic feet per acre per year.

Washington Parish has several major wood processing plants, including a large papermill and sawmill. Consequently, timber production is important to the parish economy. About 50 percent of the upland pine sites are owned by forest industry. Most of the remaining forestland, about 48 percent, is private holdings. These private tracts are mostly 500 acres or less. Most of the privately owned tracts produce at a level well below their potential. They would benefit from being thinned, having undesirable trees cut or killed, and having the competing underbrush and excess litter reduced by controlled fire. Almost all of the bottomland tracts produce at only a fraction of their potential. Protecting the tracts from grazing, fire, insects, and disease; planting trees; and improving the timber stands are measures that are needed to improve both upland and bottomland forests.

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

Environmental Values

Other environmental values associated with woodland include wildlife habitat, recreation, natural beauty, and conservation of soil and water.

The commercial forest land of Washington Parish provides food and shelter for wildlife. It offers opportunities for sport and recreation to many users annually. Hunting and fishing clubs in the parish lease or otherwise use the forest land. The forest land provides watershed protection, helps to control soil erosion, reduces sedimentation in streams and rivers, and enhances the quality and value of water resources.

Trees can be planted to screen distracting views of dumps and other unsightly areas, to minimize the sound of traffic, to reduce the effects of wind, and to lend beauty to the landscape. Trees produce fruits and nuts for use by people as well as wildlife. Trees and forests help to filter airborne dust and other impurities, convert carbon dioxide into life-giving oxygen, and provide shade from the sun.

Production of Forage in Woodland

The kind and amount of understory vegetation that can be produced in an area is related to the soils, climate, and amount of tree overstory. In many areas of pine woodland, cattle grazing is a compatible secondary use. Grazing is not recommended in hardwood woodland. If properly managed, grasses, legumes, forbs, and many of the woody browse species in the understory can be grazed as a supplement to a woodland enterprise without damaging the wood crop. In fact, on most of the pine woodland, grazing is beneficial to the woodland program because it reduces the accumulation of heavy "rough" and thus reduces the hazard of wildfire. Grazing also helps to suppress the growth of undesirable woody plants.

The success of a combined woodland and livestock program depends primarily on the degree of grazing and time that grazing is allowed. The intensity of grazing should be regulated to maintain an adequate cover for soil protection and to maintain or improve the quantity and quality of trees and forage vegetation.

Forage production varies according to the type of woodland and the amount of sunlight that reaches the understory vegetation during the growing season. Soils that have a similar potential to produce trees also have the potential to produce similar kinds and amounts of understory vegetation. The vegetative community in areas of these soils will continue to reproduce if the environment does not change. Research has indicated a close correlation between the total potential yield of grasses, legumes, and forbs growing on similar soils and the amount of sunlight reaching the ground at midday in the forest. The production of herbage declines as the forest canopy becomes denser.

One of the main objectives for good woodland grazing management is to keep the woodland forage in excellent or good condition. If the woodland is properly managed, water is conserved, yields of forage are increased, and the soils are protected.

Woodland Management and Productivity

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Climate determines the kinds of trees that can grow on a site.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer 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 7 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 7 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 *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. 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 R and W.

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, and the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest managment equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, 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. 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, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if wetness restricts equipment for more than 6 months per year 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 a seasonal high water table and the length of the periods when the water table is high, and rooting depth. 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 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 *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* and a *volume* number. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate.

The soils that are commonly used to produce timber have the yield predicted in cubic feet and board feet. The yield is predicted at the point where mean annual increment culminates. The productivity of the soils in this survey is mainly based on the site index that was determined at age 30 years for eastern cottonwood, 35 years for American sycamore, and 50 years for all other species *(9, 10, 11, 12, 13, 45)*.

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 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. Cubic meters per hectare can be converted to cubic feet per acre by multiplying by 14.3. It can be converted to board feet by multiplying by a factor of about 71. For example, a productivity of class of 8 means the soil can be expected to produce 114 cubic feet per acre per year at the point where mean annual increment culminates, or about 568 board feet per acre 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 8, 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 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm and is not dusty when dry. Strong slopes can greatly increase the cost of constructing 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 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 firm after rains and is not dusty when dry.

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.

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. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

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

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

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

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, goatweed (woolly croton), switchgrass, and lespedeza.

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

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

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 privet, yaupon, American beautyberry, and American elder.

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

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are wetness, slope, and permeability. Examples of shallow water areas are swamps, 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, mourning dove, meadowlark, field sparrow, cottontail, and red fox.

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

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

Engineering

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

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to a very firm, dense layer, soil texture, and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and 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 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 a high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

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

Sanitary Facilities

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

Table 11 also shows the suitability of the soils for use as daily cover for 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, and flooding affect absorption of the effluent.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel are 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 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, flooding, 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 can cause construction problems.

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 groundwater pollution. Ease of excavation and revegetation should be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a water table, slope, and flooding affect both types of landfill. Texture, highly organic layers, and soil reaction 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, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

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

Construction Materials

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

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

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help 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 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, 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 or slopes of 15 to 25 percent. 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, 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.

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

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

None of the soils in the survey area are rated as a probable source of gravel. A soil rated as a probable source of sand has a layer of clean sand or a layer of sand that is up to 12 percent silty fines. This material must be at least 3 feet thick. All other soils are rated as an improbable source.

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

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

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, 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 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 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives 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 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 organic matter. A high water table affects the amount of usable material. It also affects trafficability.

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

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The performance of a system is affected by the depth of the root zone 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 and wetness affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of water erosion, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness and slope affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, 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, water content, and bulk density characteristics. These results are reported in table 18.

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

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under 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 *(7)* and the system adopted by the American Association of State Highway and Transportation Officials *(6)*.

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, SP-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.

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

Physical and Chemical Properties

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

Clay as a soil separate, 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 15, 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 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils 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 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency 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 a 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. 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 16 are the depth to the seasonal high water table; the kind of water table, that is, *perched* or *apparent*; and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 16.

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

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

Dr. M.C. Amacher, Department of Agronomy, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center, prepared this section.

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

Crop composition and yield are a function of many environmental, plant, and soil factors. The more important factors are described below.

Environmental factors:
- Light—intensity and duration
- Temperature—air and soil
- Precipitation—distribution and amount
- Atmospheric carbon dioxide concentration

Plant factors (species and hybrid specific):
- Rate of nutrient and water uptake
- Rate of growth and related plant functions

Soil factors—physical properties:
- Particle-size distribution and texture
- Structure
- Surface area
- Bulk density
- Water retention and flow
- Aeration

Soil factors—chemical properties:
- *Quantity factors.* The amount of an element in the soil that is readily available for uptake by plants. To determine the quantity factor, the available supply of an element is removed from the soil, using a suitable extractant, and is analyzed.
- *Intensity factor.* The concentration of an element species in the soil moisture. It is a measure of the availability of an element for uptake by plant roots. Two soils that have identical quantities of an element's available supply but have different element intensity factors will differ in element availability to the plant.
- *Relative intensity factor.* The effect that the availability of one element has on the availability of another element.
- *Quantity/intensity relationship factor.* The relationship includes the reactions between the surface and soil water that control the distribution of element species between the available supply in the soil and the soil water. A special quantity/intensity relationship is the buffer capacity of the soil for a given element. The buffer capacity is the amount of a given element that must be added to or removed from the available supply to produce a given change in the intensity factor for that element.
- *Replenishment factor.* The rate of replenishment of the available supply and intensity factors by weathering reactions, fertilizer additions, and transport by mass flow and diffusion.

These soil 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.

The goal of soil testing is to provide 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 only one soil factor, the available supply of one or more nutrients in the plow layer. Where crop production is clearly limited by the available supply of one or more nutrients in the plow layer, existing soil tests generally can diagnose the problem and reliable recommendations to correct the problem can be made. Soil management systems generally are based on 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.

The underlying layers are less subject to change or change very slowly as a result of alteration of the plow layer. The properties of the subsoil 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. Crop production is then limited by crop and environment factors, physical properties of the plow layer, and physical and chemical properties of the subsoil.

Although the soil's available nutrient supply is only one factor affecting crop production, it is important. Information on the available nutrient supply in the subsoil allows evaluation of the native fertility levels of the soil.

Soil profiles were sampled during the soil survey and analyzed for pH; organic matter content; extractable phosphorus; exchangeable cations of calcium, magnesium, potassium, sodium, aluminum, and hydrogen; total acidity; and cation-exchange capacity. These results are summarized in Table 17. More detailed information on chemical analysis of soils is available *(1, 31, 32, 58, 59)*. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(64)*.

Reaction (pH)—1:1 soil-water solution (8C1a).
Organic matter—potassium dichromate-sulfuric acid wet digestion (6A1a).
Extractable phosphorus—Bray 2 extractant (0.03 molar ammonium fluoride-0.1 molar hydrochloric acid).
Exchangeable bases—pH 7, 1 molar ammonium acetate-calcium (6N2), magnesium (602), potassium (6Q2), sodium (6P2).
Exchangeable aluminum and hydrogen—1 molar potassium chloride (6G2).
Total acidity—pH 8.2, barium chloride-triethanlolamine (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 bases/sum cation-exchange capacity (5C3).
Sodium saturation—exchangeable sodium/sum cation-exchange capacity.
Aluminum saturation—exchangeable aluminum/effective cation-exchange capacity.

Nitrogen. Generally, over 90 percent of the nitrogen in the surface layer is in the form of organic nitrogen. Most of the nitrogen in the subsoil is in the form of fixed ammonium compounds. These forms of nitrogen are unavailable for plant uptake, but they can be converted to readily available ammonium and nitrate species.

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

Despite the lack of an adequate nitrogen soil test, the amounts of readily available ammonium- and nitrate-nitrogen in soils, the amount of organic nitrogen, the rate of mineralization of organic nitrogen to available forms of nitrogen, and the rate of conversion of fixed ammonium-nitrogen to available forms of nitrogen provide information on the fertility status of a soil with respect to nitrogen. Unfortunately, since the amounts and rates of transformation of the various forms of nitrogen in the soils of Washington Parish are unknown, no assessment of the nitrogen fertility status of these soils can be given.

Phosphorus. Phosphorus exists in the soil as discrete solid phase minerals, such as hydroxyapatite, variscite, and strengite; as occluded or coprecipitated phosphorus in other minerals; as retained phosphorus on mineral surfaces, such as carbonates, metal oxides, and layer silicates; and in organic compounds. Because most of the phosphorus in soils is unavailable for plant uptake, the availability of phosphorus in the soil is an important factor in controlling phosphorus uptake by plants.

The Bray 2 extractant tends to extract more phosphorus than the more commonly used Bray 1, Mehlich I, and Olsen extractants. The Bray 2 extractant provides an estimate of the plant-available supply of phosphorus in soils. According to soil test interpretation guidelines, the Bray 2 extractable phosphorus content of most of the soils in Washington Parish is very low to low. Only the Arat and Jena series contain medium or high levels of extractable phosphorus in the A horizon. A response to added phosphorus can be obtained where the level of extractable phosphorus is very low or low in the surface and subsurface horizons. High levels of extractable phosphorus throughout the soil profile should not be interpreted as an indication that the soil never needs phosphorus fertilizer, because the available supply of phosphorus in the soil can be reduced through continuous cropping with no additions of phosphorus. If the available supply of phosphorus is medium to high, it should be maintained by adding phosphorus to account for the removal of phosphorus by crops and the fixation of some added phosphorus as unavailable phosphorus in the soil. If the available supply of phosphorus is low, the available phosphorus levels should be gradually built up and maintained if possible.

Potassium. Potassium exists in three major forms in soils: 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. The exchangeable form of potassium in the soils is replaceable by other cations and is generally readily available for plant uptake. To become available to plants, the other forms of potassium must be converted to the exchangeable form via weathering reactions.

The exchangeable potassium content of the soils is an estimate of the supply of potassium available to plants. According to soil test interpretation guidelines, the available supply of potassium in most of the mineral soils in Washington Parish is mainly very low or low, depending on the soil texture. The exceptions are the Arkabutla, Jena, and Rosebloom soils on the flood plains. These soils may have received additional sediment from recent floods that has a high content of available potassium. The higher levels of exchangeable potassium in mineral soils are generally in silty clay loam and sandy clay loam soils. The content of exchangeable potassium in the Arat soils in the swamps also is high. The content of potassium is probably high in these soils because clayey particles and organic material have been intermixed by streams flowing into the swamps. Crops respond to applications of fertilizer potassium in areas where exchangeable potassium levels are very low to low. Low levels can be gradually built up by adding enough fertilizer potassium to account for the removal of potassium by crops, the fixation of exchangeable potassium to nonexchangeable potassium, and losses that result from leaching. Most of the soils in Washington Parish contain a sufficient amount of clay and, therefore, a sufficiently high cation-exchange capacity to maintain adequate quantities of available potassium for crop production. However, some of the soils, such as Bassfield, Fluker, Latonia, Jena, Prentiss, and Stough soils, have a low cation-exchange capacity. Frequent additions of fertilizer potassium are needed to maintain the exchangeable potassium level in these soils.

Magnesium. Magnesium exists in soils as exchangeable magnesium associated with negatively charged sites on clay mineral surfaces and as structural magnesium in mineral crystal lattices. Exchangeable magnesium is generally readily available for plant uptake; structural magnesium must be converted to exchangeable magnesium during mineral weathering reactions.

According to soil test interpretation guidelines, the exchangeable magnesium content in the upper part of most of the soils in Washington Parish is low to medium, depending upon soil texture. High levels of exchangeable magnesium are in the Arat soils in the swamps. Medium levels of exchangeable magnesium are adequate for crop production. In areas where the levels are low, some plants have a magnesium deficiency; thus, additions of fertilizer magnesium can be beneficial to crop production on many of the soils in Washington Parish.

Calcium. Calcium exists in soils 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.

The exchangeable calcium levels in the mineral soils in Washington Parish are low or medium. Calcium deficiencies in plants are rare. Thus, the levels of exchangeable calcium in the mineral soils in Washington Parish are adequate for crop production. Calcium is normally added to soils when they are limed.

High levels of exchangeable calcium are in the clayey and organic soils in the parish. Most areas of these soils are in undrained marshes and swamps.

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

Increasing the content of organic matter is difficult because organic matter is continually subjected to microbial degradation. This is especially true in Louisiana, where higher temperatures increase the rate of microbial activity. The rate of breakdown of organic matter in native plant communities is balanced by the rate of input of fresh material. Disruption of this natural process can lead to a decline in the content of organic matter in the soil. Management practices that promote soil erosion lead to a further decrease.

If no degradation of organic matter occurs, 10 tons of organic matter are needed to raise the organic matter content of the top 6 inches of soil by just 1 percent. Since breakdown of organic matter does occur in the soil, several decades of adding large amounts of organic matter to the soil are needed to produce a small increase in the organic matter content. Conservation tillage and cover crops slowly increase the organic matter content over time, or at least prevent further declines.

The content of organic matter in most of the loamy soils in Washington Parish is low or moderate. It decreases sharply with depth because fresh organic matter is confined to the surface layer. The low or moderate levels reflect the high rate of organic matter degradation, erosion, and cultural practices that make maintenance of organic matter difficult at higher levels. The laboratory data in tables 17 and 19 show unusually high levels of organic matter in the surface layer of some of the soils, such as Bibb, Latonia, Ouachita, and Tangi soils. These high levels can only indicate an error in sampling, whereby multiple samples were combined and too much surface litter was included in the composite sample.

The organic matter content of the Arat soils in swamps is high. Where these soils are drained for use as pasture or cropland, the organic matter content can remain high for many years.

Sodium. Sodium exists in soils as exchangeable sodium associated with negatively charged sites on clay mineral surfaces and as structural sodium in mineral crystal lattices. Because primary sodium minerals are readily soluble and sodium is generally not strongly retained by soils, well drained soils subjected to a moderate or more intense degree of weathering from rainfall do not normally contain significant amounts of sodium. Soils in low rainfall environments, soils that have restricted drainage in the subsoil, and soils of the Coastal Marsh contain significant to substantial 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.

Although many soils in Washington Parish contain more exchangeable sodium than exchangeable potassium, none of the soils contain excessive levels of exchangeable sodium.

pH, exchangeable aluminum and hydrogen, 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 for plant uptake by controlling mineral solubility, ion exchange, and adsorption/desorption reactions with the soil surface. Soil pH also affects microbial activity.

Aluminum exists in soils as exchangeable monomeric hydrolysis species, nonexchangeable polymeric hydrolysis species, aluminum oxides, and aluminosilicate minerals. Exchangeable aluminum in soils is determined by extraction with neutral salts, such as potassium chloride or barium chloride. The exchangeable aluminum in soils is directly related to pH. If pH is less than 5.5, the soils have a significant amount of exchangeable aluminum that has charge of plus 3. This amount of aluminum is toxic to the plants. The toxic effects of aluminum on plant growth 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. Exchangeable hydrogen, as determined by extraction with such neutral salts as potassium chloride, is normally not a major component of soil acidity because it is not readily replaceable by other cations unless accompanied by a neutralization reaction. Most of the neutral salt exchangeable hydrogen in soils apparently comes 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 the pH of the soil. Titratable acidity is the amount of acidity neutralized to a selected pH, generally pH 7 or 8.2, and constitutes the total potential acidity of a soil determined up to a given pH. 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 base 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.

Potentially toxic levels of exchangeable aluminum are in the subsoils of all of the soils in Washington Parish.

Soil treatments or other cultural methods that reduce or avoid problems associated with high levels of exchangeable aluminum have not been thoroughly studied in Louisiana. Liming soil to pH 5.5 is probably the most widespread method of reducing the exchangeable aluminum levels. A wide range of susceptibility to aluminum phytotoxicity exists among many agronomic crops, in some cases depending upon the particular cultivar grown. Planting crops or cultivars that are tolerant of high aluminum levels can help to avoid phytotoxicity problems.

Cation-exchange capacity. The cation-exchange capacity represents the available supply of nutrient and non-nutrient cations in the soil. It is the amount of cations on permanent and pH-dependent negatively charged sites on soil surfaces. Permanent charge cation-exchange sites occur because a net negative charge develops on mineral surfaces from substitution of ions within the crystal lattice. A negative charge developed from ionization of surface hydroxyl groups on minerals and organic matter 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 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 as much as the pH of the buffer (generally 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 determined by extraction with pH 7, 1-molar ammonium acetate 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. It 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 as much as pH 8.2. If a soil contains no pH-dependent exchange sites or the pH of the soil is about 8.2, the effective and sum cation-exchange capacity will be about the same. The larger the cation-exchange capacity, the larger the capacity to store nutrient cations.

Soil cation-exchange capacity is almost entirely a result of the amount and kind of clay and organic matter present. Most of the mineral soils mapped in the parish have a surface layer that contains more organic matter than the subsoil, resulting in a greater cation-exchange capacity in the surface layer than in the subsurface layers. Many of these same soils have a subsoil that is more clayey than the surface layer and subsurface layer; therefore, the cation-exchange capacity is high in the surface layer, lower in the subsurface layer, and higher again in the subsoil.

The Arat soils in the swamps have a high content of organic matter and, correspondingly, a high cation-exchange capacity. Some of the soils on narrow flood plains have a content of clay and a content of organic matter that vary with depth. The cation-exchange capacity of these soils, therefore, also varies with depth.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 18, and the results of chemical analysis are given in table 19. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Characterization Laboratory, Agronomy Department, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(64)*.

Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

Water retained—pressure extraction, percentage of ovendry weight of less than 2 mm material; ⅓ or ⅒ bar (4B1), 15 bars (4B2).

Moist bulk density—of less than 2 mm material, saran-coated clods at field moist (4A3A), air-dry (4A1b), and oven-dry (4A1h) conditions.

Organic carbon—potassium dichromate-sulfuric acid wet digestion (6A1a).

Total nitrogen—Kjeldahl (6B1b).

Extractable bases—ammonium acetate, pH 7.0, uncorrected; calcium (6N2e) magnesium (6O2d), sodium (6P2b), potassium (6Q2b).

Extractable acidity—barium chloride-triethanolamine (BaCl2-TEA) solution (6G2b).

Cation-exchange capacity—ammonium acetate, pH 7.0 (5A1b).

Base saturation—ammonium acetate, pH 7.0 (5C1).

Reaction (pH)—1:1 water dilution (8C1a).

Reaction (pH)—potassium chloride (8C1c).

Reaction (pH)—calcium chloride (8C1e).

Aluminum and hydrogen—potassium chloride extraction (6G2).

Iron oxides as Fe—sodium dithionate extract; iron (6C2b), aluminum (6G7a).

Available phosphorus—Bray 1 and 2 extraction reagents.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(63)*. 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 20 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 plain, 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 coarse-loamy, siliceous, 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. The texture of the surface layer or of the substratum within a series can have some variation. An example is the Bibb series, which is a member of the coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

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" *(65)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(63)*. 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."

Abita Series

The Abita series consists of somewhat poorly drained, slowly permeable soils that formed in loamy stream or marine sediments. These soils are on low, broad terraces of late Pleistocene age. Slopes range from 0 to 5 percent. Soils of the Abita series are fine-silty, siliceous, thermic Glossaquic Paleudalfs.

The Abita soils in Washington Parish are taxadjuncts to the Abita series because the base saturation at a depth of 50 inches below the top of the argillic horizon is less than 35 percent. This difference, however, does not significantly affect the use and management of these soils.

Abita soils are commonly near Bassfield, Cahaba, Fluker, Myatt, Prentiss, and Stough soils. The well drained Bassfield and Cahaba soils are higher on the landscape than the Abita soils and have a reddish subsoil. Bassfield soils are coarse-loamy, and Cahaba soils are fine-loamy. The somewhat poorly drained Fluker and Stough soils are on broad flats. Fluker soils have a fragipan, and Stough soils are coarse-loamy. The poorly drained Myatt soils are lower on the landscape than the Abita soils. They are fine-loamy and grayish throughout the profile. The moderately well drained Prentiss soils are in slightly higher positions on the landscape. They are coarse-loamy and have a fragipan.

Typical pedon of Abita silt loam, 0 to 2 percent slopes, 3.1 miles north of Sun, 50 feet west of Highway 21, 400 feet east of a parish road; NW¼SE¼ sec. 14, T. 4 S., R. 13 E.

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

BA—6 to 18 inches; brown (10YR 5/3) silt loam; few fine distinct light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.

B/E—18 to 25 inches; about 60 percent light yellowish brown (2.5Y 6/4) silt loam in the Bt part; few fine distinct light brownish gray (2.5Y 6/2) mottles; weak medium prismatic structure parting to weak medium subangular blocky; friable; faint patchy clay films on faces of peds; about 40 percent light brownish gray (2.5Y 6/2) silt loam (interfingers of E material) between peds; few fine reddish brown and black concretions; very strongly acid; clear wavy boundary.

Bt—25 to 32 inches; mottled strong brown (7.5YR 5/6), red (2.5YR 4/8), and gray (10YR 6/1) silty clay loam; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; few gray coatings of silt on vertical faces of peds; very strongly acid; gradual smooth boundary.

Btg1—32 to 43 inches; light brownish gray (2.5Y 5/2) silty clay loam; few medium prominent yellowish brown (10YR 5/8) mottles; weak coarse subangular blocky structure; firm; faint discontinuous clay films on most faces of peds; very strongly acid; gradual smooth boundary.

Btg2—43 to 63 inches; light brownish gray (2.5Y 6/2) clay loam; common medium prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; firm; faint patchy clay films on vertical faces of peds; very strongly acid.

The thickness of the solum ranges from 60 to 80 inches or more. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. Reaction ranges from extremely acid to neutral. Thickness ranges from 3 to 7 inches.

The BA horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. It is silt loam or silty clay loam. It has few to many mottles in shades of gray. Reaction ranges from extremely acid to neutral.

Some pedons have an E horizon instead of a BA horizon. The E 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 to 3. Texture is silt loam or very fine sandy loam. Reaction ranges from extremely acid to neutral.

The Bt part of the B/E horizon and the Bt horizon have hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. They have few to many mottles in shades of yellow, brown, or red. Texture is silt loam or silty clay loam. Reaction ranges from extremely acid to neutral.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It is silt loam, loam, clay loam, or silty clay loam. Reaction ranges from very strongly acid to slightly acid in the Btg1 horizon and from very strongly acid to mildly alkaline in the Btg2 horizon.

Angie Series

The Angie series consists of moderately well drained, slowly permeable soils that formed in loamy and clayey stream sediments. These soils are on uplands of early Pleistocene age. Slopes range from 1 to 5 percent. Soils of the Angie series are clayey, mixed, thermic Aquic Paleudults.

Angie soils are commonly near Ruston, Savannah, Smithdale, and Tangi soils. Ruston soils have more convex slopes than the Angie soils and are loamy throughout the profile. Savannah and Tangi soils are in landscape positions similar to those of the Angie soils and have a fragipan. Smithdale soils are on steeper side slopes and are loamy throughout the profile.

Typical pedon of Angie silt loam, 1 to 5 percent slopes, 6 miles west of Angie, 2.5 miles south of the Mississippi state line, 100 feet south of Highway 438, 50 feet east of a timber company road; NE¼SE¼ sec. 8, T. 1 S., R. 13 E.

Ap—0 to 3 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary.

E—3 to 7 inches; light yellowish brown (10YR 6/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; clear smooth boundary.

Bt1—7 to 16 inches; yellowish brown (10YR 5/6) silty clay loam; common medium faint brown (7.5YR 5/4) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; faint patchy clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—16 to 23 inches; strong brown (7.5YR 5/6) clay; common medium distinct red (2.5YR 4/6) and yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—23 to 44 inches; strong brown (7.5YR 5/6) clay; few medium prominent grayish brown (10YR 5/2) and common medium distinct red (2.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; very strongly acid; clear smooth boundary.

Btg—44 to 62 inches; gray (10YR 6/1) clay; many medium prominent red (2.5YR 5/6) and yellowish red (5YR 5/6) and few medium distinct yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; faint patchy clay films on vertical faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4. Thickness ranges from 3 to 8 inches. Reaction ranges from very strongly acid to slightly acid.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 5. It is sandy loam, fine sandy loam, very fine sandy loam, or silt loam. Thickness ranges from 2 to 8 inches. Reaction ranges from very strongly acid to slightly acid.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. It has few or common grayish mottles within a depth of 30 inches. The lower part of the Bt horizon has hue of 2.5Y in some pedons. It has common or many reddish and yellowish mottles. Texture of the Bt horizon is silty clay loam, clay loam, silty clay, or clay. The content of clay ranges from 35 to 60 percent. Reaction ranges from extremely acid to medium acid.

The Btg horizon is gray and has hue of 10YR or 2.5Y. It is mottled in shades of brown and red. Texture is silty clay loam, clay loam, silty clay, or clay. Reaction ranges from extremely acid to medium acid.

Arat Series

The Arat series consists of very poorly drained, slowly permeable, very fluid, mineral soils. These soils formed in herbaceous material and in loamy alluvium. They are in abandoned stream channels and in backswamps of major streams. Slopes are less than 1 percent. Soils of the Arat series are fine-silty, siliceous, nonacid, thermic Typic Hydraquents.

The Arat soils in Washington Parish are taxadjuncts to the Arat series because the pH is too low in the control section to classify in the nonacid reaction class. This difference, however, does not significantly affect the use and management of the soils.

Arat soils are commonly near Arkabutla, Bibb, Jena, Ouachita, and Rosebloom soils. All of these soils are higher on the landscape than the Arat soils and are friable or firm throughout.

Typical pedon of Arat muck, 0.5 mile south of Bogalusa, 200 feet east of Highway 21; Spanish Land Grant sec. 42, T. 3 S., R. 13 E.

Oa—0 to 3 inches; very dark gray (10YR 3/1) muck; very fluid; common wood and moss fibers; medium acid; abrupt smooth boundary.

A—3 to 12 inches; dark gray (10YR 4/1) silty clay loam; massive; very fluid, flows easily between fingers when squeezed; many wood fragments; very strongly acid; clear smooth boundary.

Cg1—12 to 45 inches; gray (10YR 5/1) silty clay loam; massive; very fluid, flows easily between fingers when squeezed; many wood fragments; very strongly acid; clear smooth boundary.

Cg2—45 to 70 inches; dark grayish brown (10YR 4/2) silty clay loam; massive; very fluid, flows easily between fingers when squeezed; many logs and wood fragments; very strongly acid.

All of the mineral horizons have an n-value of 1 or more.

The Oa horizon has value of 2 to 4 and chroma of 1 or 2. Reaction ranges from strongly acid to slightly acid.

The A horizon has value of 2 to 4 and chroma of 1 or 2. Reaction is very strongly acid or strongly acid. The horizon has few to many undecomposed logs and fragments of wood. Texture is silty clay loam, mucky silty clay loam, silt loam, or mucky silt loam.

The Cg horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. Texture is silty clay loam, silt loam, or mucky silty clay loam. Reaction is very strongly acid or strongly acid. The horizon has few to many undecomposed logs and fragments of wood.

Arkabutla Series

The Arkabutla series consists of somewhat poorly drained, moderately permeable soils that formed in loamy alluvium. These soils are on the flood plains along the major streams. Slopes range from 0 to 2 percent. Soils of the Arkabutla series are fine-silty, mixed, acid, thermic Aeric Fluvaquents.

Arkabutla soils are commonly near Arat, Bibb, Jena, Ouachita, and Rosebloom soils. The very poorly drained Arat soils are in abandoned stream channels and in backswamps. They are very fluid throughout. The poorly drained Bibb and Rosebloom soils are lower on the landscape than the Arkabutla soils. Bibb soils are coarse-loamy, and Rosebloom soils are grayish throughout the profile. The well drained Jena and Ouachita soils are in higher positions and have a brownish subsoil that does not have low-chroma mottles within 20 inches of the surface. Jena soils are coarse-loamy.

Typical pedon of Arkabutla silt loam, in an area of Arkabutla, Rosebloom, and Jena soils, frequently flooded; 4 miles east of Angie, 2,100 feet west of the Pearl River, 100 feet south of a gravel road, 400 feet south of Hunt Lake; Spanish Land Grant sec. 47, T. 1 S., R. 14 E.

A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; common fine and medium roots; extremely acid; clear smooth boundary.

Bw—5 to 16 inches; brown (10YR 5/3) silt loam; few fine faint brown (10YR 4/3) and many medium faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; firm; few medium roots; extremely acid; gradual smooth boundary.

Bg1—16 to 41 inches; light brownish gray (10YR 6/2) silt loam; common medium faint brown (10YR 5/3) and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; few fine black concretions; extremely acid; gradual smooth boundary.

Bg2—41 to 62 inches; light brownish gray (10YR 6/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; few fine black concretions; extremely acid.

The thickness of the solum is more than 40 inches. Reaction ranges from extremely acid to medium acid throughout the profile. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity. The 10- to 40- inch control section contains 20 to 35 percent clay.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. It is silt loam, loam, or silty clay loam. Thickness ranges from 4 to 8 inches.

The Bw horizon has value of 4 or 5 and chroma of 3 to 6. It has few to many mottles that have chroma 1 or 2. Texture is silt loam or silty clay loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or less. It has mottles in shades of brown. Texture is silt loam, loam, or silty clay loam. The horizon has few to many black and brown concretions.

Bassfield Series

The Bassfield series consists of well drained, moderately rapidly permeable soils that formed in loamy and sandy stream sediments. These soils are on stream terraces of late Pleistocene age. Slopes range from 1 to 3 percent. Soils of the Bassfield series are coarse-loamy, siliceous, thermic Typic Hapludults.

Bassfield soils are similar to Cahaba soils. They are commonly near Fluker, Latonia, Myatt, Prentiss, and Stough soils. Cahaba soils are on stream terraces in watersheds. They are fine-loamy. Fluker and Stough soils are on broad flats and are somewhat poorly drained. Fluker soils have a fragipan, and Stough soils have grayish mottles in the upper part of the subsoil. Latonia soils are in landscape positions similar to those of the Bassfield soils, and Prentiss soils are in slightly lower positions. Prentiss and Latonia soils both have a brownish subsoil. Prentiss soils have a fragipan. Myatt soils are in lower positions on the landscape. They are poorly drained and fine-loamy.

Typical pedon of Bassfield sandy loam, 1 to 3 percent slopes, 1.0 mile east of Varnado, 1,400 feet southwest of Jones Creek School, 400 feet east of a parish road; Spanish Land Grant sec. 41, T. 2 S., R. 14 E.

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

A—5 to 11 inches; mottled brown (7.5YR 5/4) and yellowish brown (10YR 4/8) sandy loam; weak fine granular structure; friable; few fine roots; strongly acid; clear smooth boundary.

Bt1—11 to 22 inches; yellowish red (5YR 5/8) sandy loam; weak medium subangular blocky structure; friable; few fine roots; faint patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—22 to 41 inches; yellowish red (5YR 4/6) sandy loam; few medium distinct strong brown (7.5YR 5/6) and common medium prominent yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous clay films on faces of peds; few pockets of clean sand grains; strongly acid; gradual smooth boundary.

C—41 to 62 inches; yellowish brown (10YR 6/4) loamy sand; common medium faint pale brown (10YR 6/3) and very pale brown (10YR 7/3) mottles; massive; very friable; very strongly acid.

The thickness of the solum ranges from 36 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except for the surface layer of soils that have been limed. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap and A horizons have value of 4 to 6 and chroma of 1 to 3, or they are mottled in shades of brown. The combined thickness of the Ap and A horizons ranges from 4 to 12 inches.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy loam or loam. The upper 20 inches of the Bt horizon has 8 to 18 percent clay and 20 to 45 percent silt.

The C horizon has hue of 2.5YR to 10YR, value of 5 to 7, and chroma of 3 to 8. Texture is sand or loamy sand. The horizon has few to many mottles in shades of yellow, brown, or white.

Bibb Series

The Bibb series consists of poorly drained, moderately permeable soils that formed in loamy alluvium. These soils are on flood plains. Slopes are less than 1 percent. Soils of the Bibb series are coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

Bibb soils are commonly near Arkabutla, Cahaba, Fluker, Jena, Ouachita, and Rosebloom soils. Arkabutla, Jena, and Ouachita soils are in higher positions on the flood plain than the Bibb soils. Arkabutla and Ouachita soils are fine-silty. Jena soils have a brownish subsoil. Cahaba and Fluker soils are in higher positions on nearby stream terraces. They have an argillic horizon. Rosebloom soils are in landscape positions similar to those of the Bibb soils. They are fine-silty.

Typical pedon of Bibb fine sandy loam, in an area of Ouachita, Bibb, and Jena soils, frequently flooded; 11 miles east of Franklinton, 0.5 mile south of Highway 436, 300 feet east of the East Fork of Bogue Lusa Creek, 100 feet northeast of the center of sec. 2; T. 2 S., R. 12 E.

A—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; very strongly acid; clear wavy boundary.

Ag—6 to 19 inches; dark gray (10YR 4/1) fine sandy loam; weak fine granular structure; friable; few fine and medium roots; few reddish brown (5YR 4/3) stains; very strongly acid; gradual wavy boundary.

Cg1—19 to 32 inches; gray (10YR 5/1) sandy loam; massive; friable; very strongly acid; gradual smooth boundary.

Cg2—32 to 65 inches; light gray (10YR 6/1) sandy loam; massive; friable; few medium yellowish brown (10YR 5/4) stains around old root channels; few thin strata of loamy sand; very strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except for the surface layer of soils that have been limed. The content of clay in the 10- to 40-inch control section ranges from 2 to 18 percent. In at least one subhorizon within 30 inches of the surface, 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 4 or 5, and chroma of 1 to 3. Thickness of the A horizon ranges from 3 to 6 inches.

The Ag horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 or less. Mottles in shades of brown or yellow are in some pedons. Texture is sandy loam, fine sandy loam, or loam.

The Cg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 or less. Some pedons have few to many mottles or stains in shades of red, brown, or yellow. Texture is sandy loam, fine sandy loam, loam, or silt loam.

Cahaba Series

The Cahaba series consists of well drained, moderately permeable soils that formed in loamy and sandy stream sediments. These soils are on stream terraces of late Pleistocene age. Slopes range from 1 to 5 percent. Soils of the Cahaba series are fine-loamy, siliceous, thermic Typic Hapludults.

Cahaba soils are similar to Bassfield soils. They are commonly near Fluker, Latonia, Myatt, Prentiss, and Stough soils. Bassfield soils are on stream terraces in watersheds. They are coarse-loamy. The somewhat poorly drained Fluker and Stough soils are on broad flats and have a brownish, mottled subsoil. Fluker soils are fine-silty and have a fragipan. Stough soils are coarse-loamy. Latonia soils are in landscape positions similar to those of the Cahaba soils, and Prentiss soils are in slightly lower positions. Latonia and Cahaba soils are coarse-loamy and have a brownish subsoil.

Typical pedon of Cahaba fine sandy loam, 1 to 5 percent slopes, 0.5 mile north of Warnerton, 400 feet west of Highway 38, 2,000 feet south of the Mississippi state line; Spanish Land Grant sec. 53, T. 1 S., R. 10 E.

Ap—0 to 5 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; friable; few fine roots; strongly acid; clear smooth boundary.

Bt1—5 to 24 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; firm; few medium roots; faint discontinuous clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—24 to 43 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; firm; faint patchy clay films on faces of some peds; very strongly acid; gradual smooth boundary.

C—43 to 60 inches; strong brown (7.5YR 5/6) loamy sand; common medium distinct yellowish brown (10YR 5/6) and pale brown (10YR 6/3) mottles; massive; friable; few fine chert pebbles; very strongly acid.

The thickness of the solum ranges from 36 to 60 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in the surface layer of soils in areas that have been limed. In at least one subhorizon within 30 inches of the surface, 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 2 to 4. It is 4 to 8 inches thick.

The Bt horizon is sandy clay loam, loam, or clay loam. The BC or CB horizon, if it occurs, is strong brown, yellowish brown, or red. It is sandy loam or fine sandy loam. In some pedons, it is mottled in shades of yellow and brown.

The C horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. Texture is sand, loamy sand, sandy loam, or fine sandy loam. In some pedons, the C horizon has mottles in shades of yellow, brown, and gray.

Fluker Series

The Fluker series consists of somewhat poorly drained soils that have a fragipan. The permeability is moderate above the fragipan and slow in the fragipan. These soils formed in a silty mantle and the underlying loamy sediments of late Pleistocene age. They are on uplands and stream terraces. Slopes range from 0 to 2 percent. Soils of the Fluker series are fine-silty, siliceous, thermic Glossaquic Fragiudalfs.

The Fluker soils in Washington Parish are taxadjuncts to the Fluker series because the base saturation is slightly less than the defined range for the series. This difference, however, does not significantly affect the use and management of the soils.

Fluker soils are commonly near Abita, Bassfield, Cahaba, Myatt, Prentiss, Savannah, and Stough soils. None of these soils, except for Prentiss and Savannah soils, has a fragipan. Prentiss soils are coarse-loamy, and Savannah soils are fine-loamy. Abita soils have slightly more convex slopes than the Fluker soils. Bassfield and Cahaba soils are higher on the landscape than the Fluker soils and are well drained. Prentiss and Savannah soils are slightly higher on the landscape than the Fluker soils. Stough soils are in landscape positions similar to those of the Fluker soils. They are coarse-loamy.

Typical pedon of Fluker silt loam, 2 miles west of Sun, 0.5 miles north of Highway 16, 300 feet east of Berrys Creek, 100 feet north of a timber company road; SE¼SW¼ sec. 15, T. 4 S., R. 12 E.

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

Bw—4 to 10 inches; yellowish brown (10YR 5/4) silt loam; few fine faint brown mottles; weak medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/4) 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 roots; few fine black and brown concretions; faint patchy clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—18 to 28 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few fine pores; few fine black and brown concretions; thin vertical seams of light gray (10YR 7/2) silt loam; faint discontinuous clay films on faces of some peds; very strongly acid; gradual wavy boundary.

B/E—28 to 34 inches; light brownish gray (10YR 6/2) silt loam (Bt); common medium distinct yellowish brown (10YR 5/6) and common medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; patchy clay films on vertical faces of some peds; many vertical tongues of light gray (10YR 7/2) silt loam (E) about 1 inch wide that make up about 25 percent of the horizon; very strongly acid; clear irregular boundary.

2Btx1—34 to 42 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/4) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; very firm and brittle; faint discontinuous clay films on vertical faces of some peds; common vertical tongues of light gray (10YR 7/2) silt loam about 0.5 inch wide surrounding prisms; very strongly acid; gradual wavy boundary.

2Btx2—42 to 60 inches; mottled yellowish brown (10YR 5/4), pale brown (10YR 6/3), strong brown (7.5YR 5/6), and light brownish gray (10YR 6/2) sandy loam; weak coarse prismatic structure parting to moderate medium subangular blocky; very firm and brittle; faint patchy clay films on vertical faces of some peds; few vertical seams of light gray (10YR 7/2) sandy loam about 0.25 inch wide surrounding some peds; few prisms of strong brown (7.5YR 5/6) sandy clay loam; very strongly acid.

The thickness of the solum is more than 60 inches. The depth to the fragipan ranges from 18 to 40 inches. Reaction ranges from extremely acid to medium acid throughout the solum, except in areas that have been limed. The content of total sand in the particle-size control section ranges from 10 to 25 percent. Less than 15 percent of the sand in the particle-size control section is fine sand or coarser. Typically, low-chroma mottles are within 16 inches of the surface. In at least one subhorizon within 30 inches of the surface, 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. If value is 3, the Ap horizon is less than 6 inches thick. Thickness ranges from 3 to 8 inches.

The Bw horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6. It has few to many mottles in shades of brown or gray.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6. Texture is silt loam or silty clay loam. The Bt horizon has few to many mottles in shades of brown or gray.

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 and chroma of 2. Some pedons have a grayish E horizon or a mottled E/B horizon. Vertical tongues of E material range in width from 0.25 inch to 2 inches and make up about 10 to 30 percent of the B/E horizon. Texture of the Bt part is silt loam or silty clay loam. The B/E horizon has few to many brownish mottles.

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. Texture is silt loam, sandy clay loam, loam, fine sandy loam, or sandy loam. The horizon has few to many mottles in shades of brown or gray. The content of total sand is generally more than 25 percent.

Some pedons have a 2B or 2BC horizon below the 2Btx horizon. If it occurs, the horizon has texture of sandy loam, fine sandy loam, or loam.

Jena Series

The Jena series consists of well drained, moderately permeable soils that formed in loamy and sandy alluvium. These soils are on the flood plains of major drainageways. Slopes are less than 2 percent. Soils of the Jena series are coarse-loamy, siliceous, thermic Fluventic Dystrochrepts.

Jena soils are commonly near Arat, Arkabutla, Bibb, Ouachita, and Rosebloom soils. Arat soils are in abandoned stream channels and in backswamps. They are very fluid throughout. Arkabutla, Bibb, and Rosebloom soils are in lower positions on the landscape than the Jena soils. They are grayish within 20 inches of the surface. Ouachita soils are in landscape positions similar to those of the Jena soils. They are fine-silty.

Typical pedon of Jena fine sandy loam, in an area of Arkabutla, Rosebloom, and Jena soils, frequently flooded; 4 miles east of Varnado, 900 feet west of Pearl River, 3,000 feet east of Smith Lake, 2,800 feet east of a pipeline right of way, 50 feet south of a road; Spanish Land Grant sec. 38, T. 2 S., R. 14 E.

A—0 to 7 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; strongly acid; clear smooth boundary.

Bw1—7 to 16 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; friable; strongly acid; clear smooth boundary.

Bw2—16 to 33 inches; very pale brown (10YR 7/3) sandy loam; common medium faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; strongly acid; clear smooth boundary.

C—33 to 60 inches; yellowish brown (10YR 5/4) loamy fine sand; common medium faint dark yellowish brown (10YR 4/4) and common medium distinct light gray (10YR 7/2) mottles; massive; friable; few pockets of clean sand grains; strongly acid.

The thickness of the solum ranges from 30 to 65 inches. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up about 10 to 30 percent of the effective cation-exchange capacity.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. It is very fine sandy loam, fine sandy loam, or sandy loam. Reaction ranges from very strongly acid to medium acid.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 3 to 6. It is silt loam, loam, very fine sandy loam, fine sandy loam, sandy loam, or loamy fine sand. Reaction is very strongly acid or strongly acid.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6 throughout. Some pedons have few to many mottles in shades of gray and brown. Texture is fine sandy loam, sandy loam, or loamy fine sand. Some pedons have few or common strata of sand below a depth of 40 inches. Reaction is very strongly acid or strongly acid.

Latonia Series

The Latonia series consists of well drained, moderately rapidly permeable soils that formed in loamy and sandy marine and stream sediments. These soils are on terraces of late Pleistocene age. Slopes range from 0 to 2 percent. Soils of the Latonia series are coarse-loamy, siliceous, thermic Typic Hapludults.

Latonia soils are commonly near Bassfield, Cahaba, Fluker, Myatt, Prentiss, and Stough soils. Bassfield and Cahaba soils are in landscape positions similar to those of the Latonia soils. They have a reddish subsoil. The somewhat poorly drained Fluker and Stough soils are on broad flats. Fluker soils are fine-silty. They have a fragipan. Stough soils have grayish mottles in the upper part of the subsoil. The poorly drained Myatt soils are on broad flats and in depressions. They are grayish throughout. The moderately well drained Prentiss soils are slightly lower on the landscape than the Latonia soils. They have a fragipan.

Typical pedon of Latonia fine sandy loam, 4.0 miles north of Bogalusa, 1.0 mile west of Highway 21, 100 feet east of a forest company road; SE¼SW¼ sec. 26, T. 2 S., R. 13 E.

A—0 to 4 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

BA—4 to 10 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; few fine roots; medium acid; clear smooth boundary.

Bt—10 to 26 inches; yellowish brown (10YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; common clay bridges between sand grains; very strongly acid; gradual smooth boundary.

BC—26 to 34 inches; brownish yellow (10YR 6/6) loamy sand; common medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; common pockets of clean sand grains; very strongly acid; clear smooth boundary.

2C—34 to 60 inches; light gray (10YR 7/2) sand; common medium distinct yellowish brown (10YR 5/6) mottles; massive; very friable; strongly acid.

The thickness of the solum ranges from 20 to 45 inches. In at least one subhorizon within 30 inches of the surface, 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 3. Reaction is very strongly acid or strongly acid, except in areas where the surface layer has been limed. Thickness ranges from 2 to 6 inches.

The BA horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. It is sandy loam or fine sandy loam. Reaction ranges from very strongly acid to medium acid.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. It is sandy loam, fine sandy loam, or loam. The content of clay in the Bt horizon ranges from 10 to 16 percent, and the content of silt ranges from 20 to 35 percent. Reaction is very strongly acid or strongly acid.

The BC horizon has colors that are similar to those of the Bt horizon. Texture is sandy loam, fine sandy loam, loamy sand, or loamy fine sand. Reaction is very strongly acid or strongly acid.

The 2C horizon ranges in color from white to yellowish brown. Texture is loamy sand or sand. Some pedons have few or common mottles in shades of brown. Reaction is very strongly acid or strongly acid.

Myatt Series

The Myatt series consists of poorly drained, moderately slowly permeable soils that formed in loamy marine or stream sediments. These soils are on stream terraces of late Pleistocene age. Slopes are less than 1 percent. Soils of the Myatt series are fine-loamy, siliceous, thermic Typic Ochraquults.

Myatt soils are commonly near Bassfield, Cahaba, Fluker, Prentiss, and Stough soils. All of these soils are higher on the landscape than the Myatt soils. Bassfield and Cahaba soils are well drained and have a reddish subsoil. Fluker and Prentiss soils have a fragipan. Stough soils are coarse-loamy.

Typical pedon of Myatt fine sandy loam, 5 miles north of Bogalusa, 100 feet northeast of a private road; SW¼SE¼ sec. 14, T. 2 S., R. 13 E.

A—0 to 8 inches; dark gray (10YR 4/1) fine sandy loam; weak fine granular structure; friable; few fine and medium roots; extremely acid; clear smooth boundary.

Eg—8 to 16 inches; gray (10YR 6/1) fine sandy loam; few fine distinct brown (10YR 4/3) mottles; weak fine granular structure; friable; few fine and medium roots; extremely acid; gradual wavy boundary.

Btg—16 to 38 inches; gray (10YR 6/1) sandy loam; common medium prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; krotovinas and root channel fillings of gray fine sandy loam; faint patchy clay films on faces of peds; few fine brown and black concretions; very strongly acid; gradual wavy boundary.

BCg—38 to 50 inches; mottled light brownish gray (10YR 6/2), yellowish brown (10YR 5/4), and strong brown (7.5YR 5/6) sandy clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; pockets of clean sand between peds; faint patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Cg—50 to 64 inches; gray (10YR 6/1) sandy clay loam that has pockets and lenses of sand; massive; friable; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. In at least one subhorizon within 30 inches of the surface, 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. It is 4 to 9 inches thick. Reaction ranges from extremely acid to medium acid.

The Eg horizon has hue of 10YR or 2.5Y, value of 6, and chroma of 1 or 2 or has value of 5 and chroma of 1. It is fine sandy loam, sandy loam, very fine sandy loam, or silt loam. Thickness ranges from 3 to 8 inches. Reaction ranges from extremely acid to strongly acid. Some pedons have few or common mottles in shades of brown.

The Btg horizon has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1. It has few to many mottles in shades of brown or yellow. Texture is sandy loam, fine sandy loam, sandy clay loam, loam, or clay loam that has 18 to 35 percent clay and 20 to 45 percent silt. Reaction ranges from extremely acid to strongly acid.

The BCg horizon has colors that are similar to those of the the Btg horizon. Texture is sandy loam, fine sandy loam, sandy clay loam, or loam. Reaction ranges from extremely acid to strongly acid.

The Cg horizon is sandy clay loam or clay loam. It has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1. Some pedons have few to many mottles in shades of gray and brown. Reaction ranges from extremely acid to strongly acid.

Ouachita Series

The Ouachita series consists of well drained, moderately slowly permeable soils that formed in recently deposited loamy alluvium. These soils are on the flood plains of major drainageways. Slopes are less than 2 percent. Soils of the Ouachita series are fine-silty, siliceous, thermic Fluventic Dystrochrepts.

Ouachita soils are commonly near Arkabutla, Bassfield, Bibb, Cahaba, Jena, Myatt, Rosebloom, and Stough soils. Arkabutla, Bibb, and Rosebloom soils are lower on the landscape than the Ouachita soils. They are grayish within 20 inches of the surface. Bassfield, Cahaba, Myatt, and Stough soils are on nearby stream terraces. Bassfield and Cahaba soils have a reddish subsoil. Myatt soils are poorly drained and are grayish throughout the profile. Stough soils are somewhat poorly drained. They are coarse-loamy. Jena 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, Bibb, and Jena soils, frequently flooded; 9 miles west of Franklinton, 9 miles north of Folsom, 300 feet north of Highway 16, 200 feet east of the Tchefuncte River; NE¼SE¼ sec. 26, T. 3 S., R. 9 E.

A1—0 to 4 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.

A2—4 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual smooth boundary.

Bw1—14 to 32 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium subangular blocky structure; firm; very strongly acid; gradual smooth boundary.

Bw2—32 to 42 inches; dark yellowish brown (10YR 4/4) silty clay loam; few medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; firm; very strongly acid; gradual smooth boundary.

Bw3—42 to 65 inches; yellowish brown (10YR 5/4) loam; common medium distinct brownish yellow (10YR 6/8) and dark grayish brown (10YR 4/2) mottles; weak medium subangular blocky structure; friable; very strongly acid.

The thickness of the solum ranges from 45 to 80 inches. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent of more of the effective cation-exchange capacity.

The A horizon has hue of 10YR, value of 4 or 5, and chroma 2 to 4. Thickness ranges from 7 to 14 inches. Reaction ranges from very strongly acid to medium acid.

The Bw horizon has value of 4 or 5 and chroma of 3 or 4. Some pedons have gray mottles that are more than 24 inches below the surface. The texture of the Bw horizon is silt loam, loam, or silty clay loam. Reaction ranges from very strongly acid to medium acid.

Some pedons have a C horizon. It has colors similar to those of the Bw horizon. Texture is silt loam, loam, or fine sandy loam. Reaction is very strongly acid or strongly acid.

Prentiss Series

The Prentiss series consists of moderately well drained soils that have a fragipan. They have moderate permeability above the fragipan and moderately slow permeability in the fragipan. These soils formed in loamy marine and stream sediments. They are on stream terraces of late Pleistocene age. Slopes range from 0 to 3 percent. Soils of the Prentiss series are coarse-loamy, siliceous, thermic Glossic Fragiudults.

Prentiss soils are commonly near Abita, Bassfield, Cahaba, Fluker, Latonia, Myatt, and Stough soils. Except for the Fluker soils, none of these soils has a fragipan. Fluker soils are fine-silty. Abita soils are slightly lower on the landscape than the Prentiss soils. The well drained Bassfield, Cahaba, and Latonia soils are higher on the landscape than the Prentiss soils. The somewhat poorly drained Fluker and Stough soils are on broad flats. The poorly drained Myatt soils are on broad flats and in depressions.

Typical pedon of Prentiss fine sandy loam, 0 to 1 percent slopes, 2 miles north of Bogalusa, 0.7 mile west of Highway 21, 400 feet south of Boggy Branch, 300 feet southeast of the intersection of timber company roads; SW¼NE¼ sec. 35, T. 2 S., R. 13 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; common medium and large roots; very strongly acid; clear smooth boundary.

Bt1—6 to 22 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; few medium roots; sand grains bridged with clay; very strongly acid; gradual smooth boundary.

Bt2—22 to 29 inches; yellowish brown (10YR 5/4) loam; common medium prominent strong brown (7.5YR 5/8) and few medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine roots; sand grains bridged with clay; few medium brittle brown bodies; very strongly acid; clear wavy boundary.

Btx1—29 to 48 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) loam; weak coarse and very coarse prismatic structure parting to weak medium subangular blocky; very firm and brittle; few fine roots in gray material; faint patchy clay films on faces of peds; prisms are surrounded by gray loam that contains less clay than the matrix; very strongly acid; gradual wavy boundary.

Btx2—48 to 62 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/2), strong brown (7.5YR 5/8), and light yellowish brown (10YR 6/4) sandy loam; weak coarse and very coarse prismatic structure parting to moderate medium subangular blocky; very firm; brittle and compact in about 65 percent of the volume; few fine roots in gray material; few fine pores; faint patchy 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 20 to 32 inches. The depth to mottles with chroma of 2 or less is more than 16 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of soils that have been limed. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap horizon has value of 4 or 5 and chroma of 1 to 3. Thickness ranges from 5 to 8 inches.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. It is loam, fine sandy loam, sandy loam, or silt loam. The lower part of the horizon has few to many mottles in shades of brown or gray.

The Btx horizon has colors similar to those of the Bt horizon, or it is mottled in shades of brown, yellow, red, or gray. Texture is loam, sandy loam, or fine sandy loam.

Rosebloom Series

The Rosebloom series consists of poorly drained, moderately permeable soils that formed in loamy alluvium. These soils are on the flood plains of major drainageways. Slopes are less than 2 percent. Soils of the Rosebloom series are fine-silty, mixed, acid, thermic Typic Fluvaquents.

Rosebloom soils are commonly near Arat, Arkabutla, Bibb, Jena, and Ouachita soils. Arat soils are in abandoned stream channels and backswamps. They are very fluid throughout. Arkabutla soils are slightly higher on the landscape than the Rosebloom soils. They have a subsoil that is browner in the upper part. Bibb soils are in landscape positions similar to those of the Rosebloom soils. They are coarse-loamy. Jena and Ouachita soils are in higher positions on the landscape. They have a brownish subsoil.

Typical pedon of Rosebloom silt loam, in an area of Arkabutla, Rosebloom, and Jena soils, frequently flooded; 4 miles east of Angie, 2,000 feet west of the Pearl River, 400 feet south of Hunt Lake, 100 feet south of a gravel road; Spanish Land Grant sec. 47, T. 1 S., R. 14 E.

A—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; extremely acid; clear smooth boundary.

Bg1—7 to 22 inches; light brownish gray (10YR 6/2) silt loam; few fine faint brown mottles; weak medium subangular blocky structure; friable; few fine and medium roots; few fine black concretions; extremely acid; clear smooth boundary.

Bg2—22 to 38 inches; gray (10YR 6/1) silty clay loam; few medium distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; firm; common fine black concretions; very strongly acid; clear smooth boundary.

Bg3—38 to 60 inches; gray (10YR 6/1) silty clay loam; common coarse prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; many fine black concretions; very strongly acid.

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

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. It is silt loam or silty clay loam. Thickness ranges from 4 to 10 inches. Reaction ranges from extremely acid to strongly acid.

The Bg horizon has value of 4 to 6 and chroma of 1 or 2. It has few to many mottles in shades of brown. Reaction ranges from extremely acid to strongly acid.

Ruston Series

The Ruston series consists of well drained, moderately permeable soils that formed in loamy marine or stream sediments. These soils are on uplands of early Pleistocene age. Slopes range from 1 to 8 percent. Soils of the Ruston series are fine-loamy, siliceous, thermic Typic Paleudults.

Ruston soils are commonly near Angie, Savannah, Smithdale, and Tangi soils. Angie, Savannah, and Tangi soils have less convex slopes than the Ruston soils. Angie and Tangi soils have a loamy and clayey subsoil. Tangi and Savannah soils have a fragipan. Smithdale soils are on steeper side slopes and do not have a bisequum in the subsoil.

Typical pedon of Ruston fine sandy loam, 1 to 3 percent slopes, 4 miles west of Angie, 2 miles north of Highway 438, 1,000 feet west of Munroe Creek, 600 feet south of the Mississippi state line, 100 feet north of a timber company road; NE¼NE¼ sec. 3, T. 1 S., R. 13 E.

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

E—6 to 16 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; clear smooth boundary.

Bt1—16 to 26 inches; yellowish red (5YR 5/8) loam; moderate medium subangular blocky structure; firm; few fine and medium roots; faint discontinuous clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—26 to 36 inches; yellowish red (5YR 5/6) sandy loam; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B/E—36 to 44 inches; yellowish red (5YR 5/6) sandy loam; moderate medium subangular blocky structure; firm; pockets of yellowish brown (10YR

5/4) sandy loam (E) throughout the horizon; faint patchy clay films on faces of some peds; very strongly acid; gradual wavy boundary.

B't—44 to 65 inches; red (2.5YR 4/8) sandy loam; many medium prominent yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; few small pockets of clean sand grains; few fine pores; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in the surface layer of soils that have been limed. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4. Thickness ranges from 3 to 6 inches.

The E horizon and the E part of the B/E horizon have value of 5 or 6 and chroma of 3 or 4. They are loamy sand, fine sandy loam, or sandy loam.

The Bt and B't horizons have value of 4 to 6 and chroma of 4 to 8. Texture is sandy clay loam, fine sandy loam, loam, sandy loam, or clay loam.

Savannah Series

The Savannah series consists of moderately well drained soils that have a fragipan. The permeability is moderate above the fragipan and moderately slow in the fragipan. These soils formed in loamy marine or stream sediments. They are on uplands of middle or early Pleistocene age. Slopes range from 1 to 8 percent. Soils of the Savannah series are fine-loamy, siliceous, thermic Typic Fragiudults.

Savannah soils are commonly near Angie, Ruston, Smithdale, and Tangi soils. Except for the Tangi soils, none of these soils has a fragipan. Tangi soils are fine-silty. Angie and Tangi soils are in landscape positions similar to those of the Savannah soils. The well drained Ruston soils have more convex slopes than the Savannah soils. The well drained Smithdale soils are on steeper side slopes.

Typical pedon of Savannah fine sandy loam, 1 to 3 percent slopes, 7 miles south of Franklinton, 7 miles north of Folsom, 0.5 mile east of Highway 25, 1,500 feet southeast of Bonner Creek Church, 110 feet east of a forest company road; NE¼NW¼ sec. 2, T. 4 S., R. 10 E.

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

E—5 to 11 inches; pale brown (10YR 6/3) fine sandy loam; weak fine subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; clear smooth boundary.

Bt1—11 to 18 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; firm; faint patchy clay films on faces of peds; few fine reddish brown concretions; very strongly acid; clear wavy boundary.

Bt2—18 to 23 inches; yellowish brown (10YR 5/6) clay loam; few medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx1—23 to 34 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/2), brownish yellow (10YR 6/6), and red (2.5YR 4/6) clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; very firm and brittle; faint discontinuous clay films on faces of peds; few medium reddish brown concretions; very strongly acid; clear wavy boundary.

Btx2—34 to 47 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), strong brown (7.5YR 5/6), and red (2.5YR 4/8) clay loam; weak very coarse and coarse prismatic structure; very firm and brittle; faint patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx3—47 to 62 inches; mottled yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), light yellowish brown (10YR 6/4), and red (2.5YR 4/6) sandy clay loam; weak very coarse and coarse prismatic structure; very firm and brittle; faint patchy clay films on faces of peds; strongly acid.

The thickness of the solum is more than 60 inches. The depth to the fragipan ranges from 16 to 38 inches. Reaction ranges from extremely acid to strongly acid throughout the profile. In at least one subhorizon within 30 inches of the surface layer, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap and E horizons have value of 4 to 6 and chroma of 2 or 3. Thickness of the A horizon ranges from 5 to 8 inches. Texture of the E horizon is sandy loam, fine sandy loam, loam, or silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 to 8. It is loam, clay loam, or sandy clay loam. Some pedons have few or common mottles in shades of brown or red. A few gray mottles are in the Bt horizon below a depth of 30 inches.

The Btx horizon is mottled in shades of red, brown, yellow, and gray. Texture is sandy clay loam, clay loam, or loam.

Smithdale Series

The Smithdale series consists of well drained, moderately permeable soils that formed in loamy marine or stream sediments. These soils are on uplands of early Pleistocene age. Slopes range from 8 to 20 percent. Soils of the Smithdale series are fine-loamy, siliceous, thermic Typic Hapludults.

Smithdale soils are similar to Bassfield and Cahaba soils. They are commonly near Angie, Ruston, and Tangi soils. Bassfield and Cahaba soils are on stream terraces at lower elevations than the Smithdale soils. They have a solum less than 60 inches thick. Angie, Ruston, Savannah, and Tangi soils are less sloping than the Smithdale soils. Angie soils have a loamy and clayey subsoil. Ruston soils have a solum that has a bisequum. Savannah and Tangi soils have a fragipan.

Typical pedon of Smithdale fine sandy loam, 8 to 12 percent slopes, 5 miles south of Franklinton, 0.8 mile east of Highway 25, 200 feet south of a timber company road; NE¼SE¼ sec. 23, T. 3 S., R. 10 E.

A—0 to 7 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; common fine roots; medium acid; clear smooth boundary.

E—7 to 15 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; few fine roots; medium acid; clear smooth boundary.

Bt1—15 to 28 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—28 to 54 inches; red (2.5YR 4/6) sandy clay loam; common medium prominent brown (10YR 5/3) mottles; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; dark stains on faces of some peds; very strongly acid; clear wavy boundary.

Bt3—54 to 70 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; firm; faint patchy clay films on faces of peds; few pockets and streaks of light yellowish brown sand; very strongly acid.

The thickness of the solum is more than 60 inches. All of the horizons are very strongly acid or strongly acid, except for the surface layer and subsurface layer of soils in areas that have been limed. In at least one subhorizon within 30 inches of the soil surface, 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. Thickness ranges from 3 to 10 inches.

The E horizon has value of 5 or 6 and chroma of 2 to 4. It is fine sandy loam, sandy loam, loamy fine sand, or loamy sand.

The upper part of the Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. Some pedons have few or common mottles in shades of red or brown. Texture is clay loam, sandy clay loam, or loam. The lower part of the Bt horizon has colors similar to those of the upper part of the Bt horizon, except that it commonly has few to many pockets and streaks of yellowish brown, light yellowish brown, or pale brown sand. Texture is loam or sandy loam.

Stough Series

The Stough series consists of somewhat poorly drained, moderately slowly permeable soils that formed in loamy marine and stream sediments. These soils are on stream terraces of late Pleistocene age. Slopes are less than 1 percent. Soils of the Stough series are coarse-loamy, siliceous, thermic Fragiaquic Paleudults.

Stough soils are commonly near Abita, Bassfield, Cahaba, Fluker, Myatt, and Prentiss soils. Abita soils have slightly more convex slopes than the Stough soils, and Fluker soils are in landscape positions similar to the Stough soils. Abita and Fluker soils are fine-silty. Fluker soils have a fragipan. The well drained Bassfield and Cahaba soils are higher on the landscape than the Stough soils and have a reddish subsoil. The poorly drained Myatt soils are in lower positions on the landscape. They are fine-loamy and grayish throughout the profile. The moderately well drained Prentiss soils are in slightly higher positions on the landscape. They have a fragipan.

Typical pedon of Stough fine sandy loam, 5 miles north of Bogalusa, 1.5 miles south of Varnado, 200 feet east of Highway 21, 200 feet south of a timber company road; NE¼NE¼ sec. 24, T. 2 S., R. 13 E.

A—0 to 4 inches; dark gray (10YR 4/1) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; extremely acid; clear wavy boundary.

B/E—4 to 8 inches; mottled pale brown (10YR 6/3) and light yellowish brown (10YR 6/4) sandy loam in the Bt part and gray (10YR 5/1) sandy loam in the E part; weak medium subangular blocky structure; friable; few medium roots; extremely acid; clear wavy boundary.

Bt1—8 to 14 inches; mottled light yellowish brown

(10YR 6/4), pale brown (10YR 6/3), and light brownish gray (10YR 6/2) loam; weak medium subangular blocky structure; friable; faint patchy clay films on faces of peds; few root channels and krotovinas filled with gray (10YR 5/1) fine sandy loam; few fine and medium brown and black concretions; extremely acid; gradual wavy boundary.

Bt2—14 to 20 inches; mottled light yellowish brown (10YR 6/4), light brownish gray (10YR 6/2), and yellowish brown (10YR 5/6) loam; weak coarse prismatic structure parting to weak medium subangular blocky; the grayish part is friable and the brownish part is firm and slightly brittle; faint discontinuous clay films on faces of peds; few medium and fine reddish brown and black concretions; very strongly acid; gradual wavy boundary.

Btx1—20 to 29 inches; mottled light yellowish brown (10YR 6/4), yellowish brown (10YR 5/6), and light brownish gray (10YR 6/2) sandy loam; weak coarse subangular blocky structure; the brownish part is very firm and brittle and makes up about 50 percent of the volume and the grayish part is friable; faint patchy clay films on vertical faces of peds; very strongly acid; gradual wavy boundary.

Btx2—29 to 47 inches; mottled light brownish gray (10YR 6/2), light yellowish brown (10YR 6/4), and strong brown (7.5YR 5/6) loam; weak coarse subangular blocky structure; the brownish part is very firm and brittle and makes up about 60 percent of the volume and the grayish part is friable; faint patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx3—47 to 64 inches; mottled light yellowish brown (10YR 6/4), gray (10YR 6/1), strong brown (7.5YR 5/6), and reddish brown (5YR 5/4) sandy clay loam; weak coarse subangular blocky structure; the strong brown and reddish brown parts are very firm and brittle and make up about 50 percent of the volume and the light yellowish brown part is friable; faint patchy clay films on faces of peds; few medium brown concretions; very strongly acid.

The solum is more than 60 inches thick. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The A horizon has value of 3 or 4 and chroma of 1 or 2. Thickness ranges from 3 to 6 inches. Reaction ranges from extremely acid to strongly acid.

The Ap horizon and the E horizon, if it occurs, have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. Texture of the E horizon is sandy loam or fine sandy loam. Reaction ranges from extremely acid to strongly acid.

The B/E horizon is mottled in shades of brown and gray with hue of 10YR or 2.5Y. The texture of the Bt and E parts is sandy loam, fine sandy loam, or loam. Reaction ranges from extremely acid to strongly acid.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6, or it is mottled in shades of brown and gray. The upper 10 inches of the Bt horizon have mottles with chroma of 2 or less. The content of clay in the upper 20 inches is less than 18 percent. Texture is fine sandy loam, loam, or sandy loam. Reaction ranges from extremely acid to strongly acid.

The Btx horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6, or it is mottled in shades of brown, gray, or red. The brown part, which makes up about 40 to 60 percent of the volume, is brittle and compact. Texture is sandy loam, fine sandy loam, loam, or sandy clay loam. Reaction is very strongly acid or strongly acid.

Tangi Series

The Tangi series consists of moderately well drained soils that have a fragipan. The permeability is moderate in the upper part of the subsoil and very slow in the fragipan. These soils formed in a moderately thick mantle of loess over loamy and clayey marine or stream sediments. They are on uplands of early Pleistocene age. Slopes range from 1 to 8 percent. Soils of the Tangi series are fine-silty, siliceous, thermic Typic Fragiudults.

Tangi soils are commonly near Fluker, Ruston, Savannah, and Smithdale soils. The somewhat poorly drained Fluker soils are in depressions and have grayish mottles within 16 inches of the surface. The well drained Ruston soils have more convex slopes than the Tangi soils. They do not have a fragipan. Savannah soils are in landscape positions similar to those of the Tangi soils. They are fine-loamy. The well drained Smithdale soils are on steeper side slopes and do not have a fragipan.

Typical pedon of Tangi silt loam, 1 to 3 percent slopes, 6.2 miles southwest of Franklinton, 2,200 feet southeast of Louisiana Highway 16, 300 feet southeast of the Southeast Louisiana Agricultural Experiment Station headquarters building; SE¼SW¼ sec. 16, T. 3 S., R. 10 E.

Ap—0 to 7 inches; dark gray (10YR 4/1) silt loam; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

Bt1—7 to 17 inches; yellowish brown (10YR 5/8) silt loam; weak medium and coarse subangular blocky structure; friable; common fine roots; few fine random discontinuous tubular pores; faint patchy clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—17 to 32 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct pale brown (10YR 6/3) mottles; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; friable; many fine roots; few fine and medium black and brown concretions; few brittle bodies that surround the mottles and concretions and make up about 10 percent of the cross section in the lower part of horizon; few fine random discontinuous tubular pores; faint patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

2Btx1—32 to 38 inches; yellowish brown (10YR 5/4) silty clay loam; moderate very coarse and coarse prismatic structure parting to moderate medium subangular blocky; very firm and brittle; few fine roots in seams between prisms; pale brown (10YR 6/3) vertical and horizontal seams of silt loam and uncoated sand grains surrounding some peds; many medium and coarse red (2.5YR 4/6) and strong brown (7.5YR 5/6) brittle bodies that make up about 70 percent of the cross section; few vertical gray (10YR 6/1) seams about 0.25 to 1 inch thick; distinct continuous clay films on faces of peds; many fine and medium black and brown concretions; very strongly acid; gradual wavy boundary.

2Btx2—38 to 41 inches; strong brown (7.5YR 5/6) clay; many medium prominent red (2.5Y 4/8) and light gray (10YR 7/2) mottles; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; about 30 percent of the cross section is friable and 70 percent is compact and brittle; common few fine roots in seams between prisms; few fine random discontinuous tubular pores; few fine black and brown concretions; seams of yellowish brown (10YR 5/6) silty clay loam between peds; thin coatings of silt and uncoated sand grains on faces of some peds; distinct continuous clay films on vertical faces of peds; strongly acid; gradual wavy boundary.

2Btx3—41 to 67 inches; strong brown (7.5YR 5/6) clay; moderate coarse and very coarse prismatic structure parting to moderate medium subangular blocky; about 80 percent of the cross section is firm and brittle and 20 percent is friable; few fine roots in seams between prisms; few fine random discontinuous tubular pores; many bodies of friable yellowish brown (10YR 5/6) silty clay loam; many yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) seams of silt loam and uncoated sand grains on vertical faces of peds; distinct continuous clay films on vertical 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. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas that have been limed. In at least one subhorizon within 30 inches of the surface, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity. The content of total sand in the particle-size control section ranges from 10 to 25 percent. Less than 15 percent of the sand in the particle-size control section is fine sand or coarser.

The A horizon has value of 3 to 5 and chroma of 1 to 4. If value is 3, the A horizon is less than 6 inches thick. Thickness ranges from 3 to 7 inches.

Some pedons have a thin silt loam BE horizon with hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 8.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. Texture is silt loam or silty clay loam. Some pedons have few or common mottles in shades of brown.

The 2Btx horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8 or has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. The hue of 10YR or 7.5YR is only in the uppermost subhorizon of the 2Btx horizon. The 2Btx horizon has few to many mottles in shades of brown, gray, or red. Texture is loam, silty clay loam, clay loam, sandy clay loam, sandy clay, or clay. The content of total sand in the 2Btx horizon 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.

Formation of the Soils

This section discusses the factors of soil formation and the processes of horizon differentiation and relates them to the soils in the survey area.

Factors of Soil Formation

Soil is a natural, three-dimensional body that formed on the earth's surface and that has properties resulting from the integrated effect of climate and living matter acting on parent material, as conditioned by relief over time.

The interaction of five main factors influences the processes of soil formation and results in differences among the soils. The factors are climate, the physical and chemical composition of the parent material, the kind of plants and other organisms living in and on the soil, the relief of the land and its effect on runoff and soil moisture conditions, and the length of time it took the soil to form.

The relative effect of any one factor can differ from place to place, but the interaction of all the factors determines the kind of soil that forms. Because of these interactions, many of the differences in soils cannot be attributed to differences in only one factor. For example, the content of organic matter in the soils of Washington Parish is influenced by several factors, including relief, parent material, and living organisms. Such interactions do not preclude recognition of the manner in which a given factor can influence a special soil property. In the following paragraphs, the factors of soil formation are described as they relate to the soils in the parish.

Climate

Washington Parish is in a region characterized by a humid, subtropical climate. A detailed discussion of the climate in the parish is given in the section "General Nature of the Survey Area."

The climate is relatively uniform throughout the parish. As a result, local differences in the soils are not caused by large differences in atmospheric climate. The warm average temperatures and the large amounts of precipitation favor a rapid rate of weathering of readily weatherable minerals in the soils. The most permeable soils are typically the most highly leached soils. They have acid reaction throughout the solum. The less permeable soils are generally less leached, as indicated by soil reaction that becomes more alkaline with depth. Many of the soils in the parish have developed distinct horizons of secondary accumulations of clay. Differences in weathering, leaching, and translocating clay in soils in the parish are caused mainly by variations in time, relief, and parent material rather than climate. Weathering processes involving the release and reduction of iron and manganese are indicated by the gray colors in the Eg, Bg, or Cg horizons of many soils. Oxidation and segregation of these elements, as a result of alternating oxidizing and reducing conditions, is indicated by mottled horizons and iron and manganese concretions in most of the soils.

Living Organisms

Living organisms affect the processes of soil formation in numerous ways; therefore, they exert a major influence on the kind and extent of horizons that develop. The growth of plants and activities of other organisms physically disturb the soil, which modifies porosity and influences the formation of structure and the incorporation of organic matter. Plants use energy from the sun to synthesize the compounds necessary for growth, and thus they produce additional organic matter. The growth of plants and their eventual death and decomposition recycle nutrients from the soil to the plant and back to the soil. Plant decomposition is a major source of organic residue. The decomposition of plants and the incorporation of organic matter into the soil by microorganisms enhance the development of structure and generally increase the infiltration rate and available water-holding capacity of the soils.

Relatively stable organic compounds in the soils generally have a very high cation-exchange capacity; thus they increase the capacity of the soil to absorb and store nutrients, such as calcium, magnesium, and potassium. The extent of these and other processes and the kind of organic matter produced can vary widely, depending on the kinds of organisms living in and on the soil. For example, the organic matter content of soils that formed under prairie vegetation is typically higher than that of soils that formed under forest *(15, 28, 54)*.

Differences in the amount of organic matter that has accumulated in and on the soils is influenced by the types and populations of microorganisms. Aerobic organisms use oxygen from the air, and they are mainly responsible for organic matter decomposition through the rapid oxidation of organic residues. These organisms are most abundant, and they prevail in the better drained and aerated soils.

In the more poorly drained soils, anaerobic organisms are predominant for long periods during the year. Anaerobic organisms do not require oxygen from the air, and they decompose organic residues very slowly. The difference in decomposition by microorganisms results in larger accumulations of organic matter in soils that have restricted drainage than in better drained soils. The content of organic matter is generally higher in soils that are more poorly drained and are not well aerated.

Relief

The major physiographic features of Washington Parish are discussed in the section "Landforms and Surface Geology." Relief and other physiographic features influence soil formation processes by affecting internal soil drainage, runoff, erosion and deposition, salinity levels, and exposure to the sun and wind.

The influence of relief on the soils in Washington Parish is especially evident in the rates at which water runs off the surface, in the internal soil drainage, and in the depth and duration of a seasonal high water table.

Soils on uplands generally have more relief than soils on broad stream or marine terraces and alluvial plains. Ruston soils have more relief and are at higher elevations than the associated Savannah soils. The seasonal high water table in the Ruston soils is at a depth of more than 6 feet. The seasonal high water table in the Savannah soils ranges from a depth of 1.5 to 3.0 feet below the surface. It is present for long periods.

Soil drainage also becomes more restricted in areas that have less relief and are at the lower elevations. Ruston soils are well drained, and the Savannah soils are moderately well drained.

Parent Material and Time

The parent material of mineral soils is the material from which the soils formed. In Washington Parish, the effects of parent material are especially expressed through differences in soil color, texture, permeability, and depth and degree of leaching. Parent material also had a major influence on the mineralogy of the soils. It is a significant factor in determining a soil's susceptibility to erosion. The characteristics, distribution, and depositional sequence of parent material is more thoroughly discussed in the section "Landforms and Surface Geology."

Parent material and time are independent factors of soil formation. For example, a particular kind of parent material may have been exposed to the processes of soil formation for a period ranging from a few years or less to more than a million years. The kinds of horizons and their degree of development within a soil are influenced by the length of time of soil formation. Long periods of time are generally required for prominent horizons to form. In Washington Parish, possible differences in the duration of soil formation amount to thousands of years for some of the soils.

The soils in Washington Parish formed in marine and fluvial sediments, dominantly of Pleistocene age, and in fluvial sediments of Holocene (Recent) age *(47)*. The sediments from two major Pleistocene terrace formations, the Citronelle and Prairie, served as the parent material for many of the soils in the parish. Some of the soils formed in fluvial sediments of Late Pleistocene age, and they make up the Deweyville Terrace. The sediments of this formation are believed to be intermediate in age, ranging in age between the Holocene alluvium and the sediments of the Prairie Terrace.

The older of the two Pleistocene terraces, the Citronelle Formation, formed as a deltaic plain of the Mississippi River. The source of some of the sediments may have been the Appalachian region *(19, 49)*. The sediments have been continuously exposed to weathering and to soil formation processes since their deposition more than 400,000 years ago. The outcrop areas of the Citronelle Formation correspond approximately to the Ruston-Smithdale and Savannah-Ruston-Tangi general soil map units. The soils that formed in the Citronelle Formation are highly weathered and leached and are characterized by a distinct B horizon that has secondary accumulations of clay. They are classified as Ultisols, and thus they have a low base status and an acid soil reaction throughout.

Sediments of the younger Pleistocene terrace formation, the Prairie Formation, were deposited as an upper deltaic or lower alluvial plain of the Mississippi River. Some of the sediments may have come from more easterly Appalachian sources. These sediments have been continuously exposed to weathering and soil formation processes since their deposition 30,000 or more years ago. The outcrop areas of the Prairie

Formation correspond approximately to the Myatt-Stough-Prentiss and Cahaba-Prentiss-Bassfield general soil map units. The soils that formed in the Prairie Terrace also are highly weathered and leached. The soils in the Myatt-Stough-Prentiss general soil map unit formed in loamy and sandy, highly weathered sediments. They are classified as Ultisols.

Late Pleistocene and early Holocene deposits are in relatively narrow bands that flank major streams. These post-Prairie sediments are probably comparable in age to the sediments of the Deweyville Terrace, which are about 20,000 years old, that are mapped in other areas of Louisiana. The Deweyville Terrace may be evidenced in the large, relict meander scars of the Bogue Chitto and Pearl Rivers. The terraces are fluvial in origin, but the alluvium was deposited by ancient streams under a different set of environmental conditions than the conditions of today *(26)*. These terraces are a major source of sand and gravel in Washington Parish. The present-day streams do not carry the volume of coarse sediments necessary to produce such deposits. Cahaba soils are the major soils that formed in these sediments. They formed in highly weathered sediments of low base status and are therefore Ultisols.

Soils that formed in even younger parent material are on flood plains of streams. The flood plains correspond approximately to the Ouachita-Bibb-Jena and Arkabutla-Rosebloom-Jena general soil map units. The soils formed in recently deposited, unconsolidated, loamy and sandy sediments along most of the streams in the parish. The flood plains are subject to scouring and deposition of sediments. They consist of a braided system of small natural levees and swales. The well drained Ouachita and Jena soils are on natural levees and are classified as Inceptisols. Bibb, Arkabutla, and Rosebloom soils are in lower areas on the landscape and are classified as Entisols.

Some of the youngest soils in Washington Parish are in the swamps at the lowest elevations in the parish. These soils continually receive depositions of sediment. Arat soils are fluid, mineral soils that formed in unconsolidated, loamy alluvium.

Processes of Soil Formation

The processes of soil formation are those processes or events in soils that influence the kind and degree of development of soil horizons. The rate and relative effectiveness of different processes are determined by the factors of soil formation: climate, living organisms, relief, parent material, and time.

Important soil-forming processes include those that result in additions of organic, mineral, and gaseous materials to the soil; losses of these same materials from the soil; translocation of materials within the soils; and physical and chemical transformation of mineral and organic materials within the soil *(15, 27, 39, 40)*.

Many processes occur simultaneously in soils. Examples in the survey area include accumulating organic matter, developing soil structure, and leaching of bases from soil horizons. The contribution of a particular process may change with time. For example, installing drainage and water-control systems can change the length of time that the soils are flooded or saturated with water. Some important processes that have contributed to the formation of the soils in Washington Parish are discussed in the following paragraphs.

Organic matter has accumulated, undergone partial decomposition, and been incorporated in all the soils. The production of organic matter is greatest in and above the surface layer. It results in the formation of soils that have a surface layer with a higher content of organic matter than the deeper horizons. The decomposition, incorporation, and mixture of organic residues into the soil is accomplished largely through the activity of living organisms. Many of the more stable products of decomposition remain as finely divided materials. These materials increase granulation, contribute dark color, increase the water-holding and cation-exchange capacities, and serve as a source of plant nutrients in the soil.

The addition of alluvium at the surface has been important in the formation of some soils. The added material becomes new parent material in which the processes of soil formation occur. Typically, the soils that developed under these conditions do not have prominent horizons. Arkabutla, Bibb, Jena, Ouachita, and Rosebloom soils formed in recently deposited loamy and sandy alluvium.

The processes that result in the development of soil structure have occurred in most of the soils. Plant roots and other organisms rearrange the soil material into aggregates. The products of decomposition or organic residue and the secretions of organisms serve as cementing agents that help to stabilize structural aggregates. Alternate patterns of wetting and drying, as well as shrinking and swelling, contribute to the development of structural aggregates, particularly in soils that have a high content of clay. Consequently, soil structure is generally the most pronounced in clayey B horizons and in surface horizons that contain the most organic matter.

Many of the soils in the parish have horizons in which the segregation of iron and manganese compounds, which resulted from alternating oxidizing and reducing conditions, has been an important process. Reducing conditions prevail for long periods in poorly aerated horizons. Consequently, the relatively soluble, reduced forms of iron and manganese are predominant over the less soluble oxidized forms in the soil solution. The reduced forms of these elements can result in gray colors in the Bg and Cg horizons, which are characteristic of many of the soils in the parish. In the more soluble reduced form, appreciable amounts of iron and manganese can be removed from the soils or can be translocated from one part of the soil to another by water. The presence of brown mottles in predominantly gray horizons indicates the segregation and local concentration of oxidized iron compounds as a result of alternating oxidizing and reducing conditions. The well drained Bassfield, Cahaba, Latonia, Ruston, and Smithdale soils do not have the gray colors associated with wetness and poor aeration. They apparently have not been dominated by a reducing environment for a significant period of time.

The loss of elements from the soils has been an important process in soil formation. Water moving through the soil has leached soluble bases and any free carbonates that may have been present from some horizons of all the soils. The most extensive leaching has occurred in Ruston, Savannah, Prentiss, Myatt, and Stough soils. Abita and Fluker soils have experienced moderate leaching. Some soils, such as Arat soils, have experienced little or no leaching. Soils such as Jena, Ouachita, and Bibb soils formed in local stream deposits that were mainly derived from material that eroded from the surface of surrounding areas. As a result, these deposits were highly weathered and low in bases at the time of deposition.

The formation, translocation, and accumulation of clay in the profile have been important processes during the development of many soils in Washington Parish. Silicon and aluminum, released as a result of weathering of such minerals as hornblende, amphibole, and feldspars, can recombine with the components of water to form secondary clay minerals such as kaolinite. Layer silicate minerals, such as biotite, glauconite, and montmorillonite, can also weather to form other clay minerals, such as vermiculite or kaolinite. The horizons that have secondary accumulations of clay result largely from the translocation of clay from upper to lower horizons. As water moves downward, it can carry small amounts of clay in suspension. The clay is deposited, and it accumulates at the depth of water penetration or in horizons where it becomes flocculated or filtered out by fine pores in the soil. Over a long period, such processes can result in distinct horizons of clay accumulation. Some soils in Washington Parish, such as Ruston, Tangi, Savannah, Myatt, Stough, and Prentiss soils, have a subsoil characterized by a secondary accumulation of clay. Those soils that formed in recently deposited alluvium, such as Arat, Arkabutla, Bibb, Jena, and Rosebloom soils, show little evidence of clay accumulation.

Landforms and Surface Geology

Joann Mossa, Louisiana Geological Survey, prepared this section.

Washington Parish occupies approximately 675 square miles of southeastern Louisiana. It is adjacent to the state of Mississippi, both on its northern border at latitude 31 degrees north and on its eastern border, which follows the Pearl River. The western border of the parish, in part, follows the Tchefuncte River.

Major rivers in Washington Parish include the Pearl River and the Bogue Chitto River. Both rivers originate in south-central Mississippi. The Pearl River drains 8,670 square miles, flowing southward and entering the Gulf of Mexico in the vicinity of Lake Borgne and the Mississippi Sound. The Bogue Chitto River, a tributary of the Pearl River, flows generally south and then southeastward through Washington Parish. It drains 1,225 square miles *(55)*. The Bogue Chitto River enters the Pearl River approximately 3 miles south of Washington Parish.

Elevations in Washington Parish range from 50 to 360 feet above mean sea level. The highest elevations are on hillcrests formed by Pliocene or Early Pleistocene deposits. The lowest elevations are in stream valleys in the southern part of the parish.

Geologic History

The geologic map of Louisiana recognizes four geologic units in Washington Parish. They are the High Terraces, Prairie Terraces, Deweyville Terraces, and alluvium.

The High Terraces are blanketed by a thin veneer of loess. They have a distribution similar to that of deposits that have been designated previously as the Citronelle Formation *(37)*. Fisk believed that portions of two terraces, named the Bentley and Williana, occur across the area *(25)*; however, distinctive topographic surfaces have not been recognized by many other workers. The surface has been dissected appreciably, and it bears little resemblance to a terrace. It forms a cuesta, or an elongated ridge of more resistant strata, that unconformably overlies fine-grained Tertiary deposits. The local relief is more pronounced and the slopes of this surface are appreciably greater than those of lower terraces. In other parts of the soil survey, the High Terraces are called uplands.

The deposits that form the High Terraces in Washington Parish consist predominantly of sand and gravel, the source of which has been regarded to be an eastern Gulf or Appalachian provenance *(19, 49)*. Heavy minerals include kyanite, staurolite, zircon, and tourmaline. Early workers speculated that the sediments were glaciofluvial, marine, or meandering stream deposits, but the current consensus is that the pebbles were deposited by braided streams or alluvial fans. The age of these deposits has also been argued. They have been called Pleistocene, Pliocene, and Miocene. Several researchers accept a Pliocene and Pleistocene time-transgressive deposition for the surficial sediments in Louisiana.

The predominance of coarse-grained deposits in the High Terraces has been attributed to stream rejuvenation caused by uplift of the continental interior *(18, 21, 22, 49)*; deposition by a larger river system, such as an ancestral Tennessee River *(14, 16)*; or a more arid climatic regime *(5)*. None of these ideas, however, have been fully substantiated. The occurrence of coarse-grained deposits on interfluves indicates that the modern hillcrests are probably gravel-defended ridges *(14)* that were selectively preserved from erosional processes.

In Washington Parish, sediments on the hillcrests of the High Terraces may be loamy, silty, or clayey. The soils that formed in the loamy sediments on hillcrests are mainly Ruston soils. Smithdale soils also are loamy, but they formed on side slopes of the High Terraces. Tangi soils formed on hillcrests with silty sediments, or loess. These soils are mainly in the western part of the parish, which received more loess from the Mississippi River Valley than the eastern part. Angie soils formed on hillcrests with clayey sediments.

Although two major deposits of loess are in the southern part of Louisiana, only the older and more extensive of these, called the Sicily Island Loess, is in Washington Parish *(41, 42)*. The loess only blankets the High and Intermediate terraces in south Louisiana; younger deposits, such as the Prairie Terraces, are not blanketed *(41)*. The older loess has been dated in Mississippi by thermoluminescence at 95,000 to 75,000 years before the present *(29)* and at 85,000 to 76,000 years before the present *(48)*. The thickness of the loess is generally a function of the distance from the source, the ancestral Mississippi River *(57, 41)*. The thickness of the loess ranges from 0 to 3 feet in Washington Parish.

The original concept of the Prairie Terraces, as with the older surfaces, was that the complex represented a single, merging river-trending and coast-trending surface *(23, 24, 25)*. Revised descriptions now divide the terrace complex into three sublevels in southwestern Louisiana. Two of these sublevels trend along alluvial valleys, and the lower of the two coalesces with a broad coast-trending surface. The third and lowest sublevel exhibits only coast-trending expression. Such sublevels were distinguished in maps of the Quaternary terraces of southwestern Louisiana *(56, 30)*, which were based in part on studies in the Red River Valley *(50)* and the Gulf Coastal Plain *(21)*. Multiple surfaces have also been recognized in southeastern Louisiana *(43, 44)* but have not been documented regionally.

The fill beneath the Prairie Terraces in south Louisiana consists predominantly of fluvial and deltaic material. The age of the deposits is regarded as late Pleistocene; specifically, the deposits are either mid-Wisconsinan or Sangamonian or some range within this span. These estimates have been based on inferences of sea level and such criteria as the preservation of geomorphic features, the degree of soil development, the presence of the Peoria Loess only, the type and size of depositional and erosional features, paleobotanical findings, and radiometric dates of organic material that have been reported as Farmdalian or beyond the range of the Carbon-14 method *(25, 38, 51, 20, 46, 2, 3, 4, 41)*.

The soils that formed on the Prairie Terraces include Fluker, Stough, Prentiss, Myatt, and Cahaba soils. Fluker soils formed in silty sediments. They are on toe slopes and in depressions on the High Terraces. Latonia soils formed in coarse-loamy sediments on low alluvial ridges. Cahaba, Prentiss, and Stough soils, which show differences in drainage and texture, formed on loamy alluvial ridges on the Prairie Terraces. Myatt soils are in low positions on the Prairie Terraces.

The Deweyville Terrace in the southern part of Louisiana is a river-trending surface that is late Pleistocene to early Holocene in age. Carbon-14 dates from these deposits range from 30,000 to 9,000 years before the present. The terrace is along streams of intermediate size, and it is topographically higher than the Holocene alluvium and lower than the Prairie Terraces. It is along the Pearl River but is not apparent along the Bogue Chitto River. As with the other surfaces, it is an enigma because sublevels may be present *(5)*, the spatial relationships across the region and with coast-trending subsurface deposits are poorly understood *(33, 52, 53)*, and the temporal and causal relationships are variable or are undetermined *(8, 26, 4)*.

The Deweyville Terrace has meander scars that have wavelengths three to six times larger than those of modern rivers. Pluvial climates, which are wetter and colder than the present climate, often have been cited as a cause of the large meanders. However, the influence of base-level changes could be more important than the influence of the climate. Gagliano and Thom *(26)* observed larger slopes on the Deweyville Terrace than on the Prairie Terrace along the Pearl River, although this is not the case in every area *(8)*.

The soils that formed on the Deweyville Terrace include some of the same soils that formed on the Prairie Terrace. Cahaba and Fluker soils are on both the Deweyville and Prairie Terraces. In Washington Parish, Abita soils are only on the Deweyville Terrace.

Alluvium deposits are in the valleys of the Pearl and Bogue Chitto Rivers and their tributaries. These deposits are Holocene in age and receive additional sediments as they are repeatedly flooded. The alluvium of the rivers, particularly of the modern and ancestral bed and bars, consists predominantly of a mixture of sand and gravel. The flood plain receives material from overbank deposition that settles out of suspension. Sand, which is the coarsest material, is deposited first. It is followed by silt and clay.

The soils that formed in alluvium include Arat, Arkabutla, Rosebloom, Ouachita, Bibb, and Jena soils. The alluvium is dominantly highly weathered. Arat soils formed in unconsolidated or fluid backswamp deposits, mostly in the Pearl River Valley. Arkabutla, Rosebloom, and Jena soils are the predominant soils on the flood plains of the Pearl River. Ouachita and Bibb soils are the major soils on the flood plains of the Bogue Chitto River, the Tchefuncte River, and most of the other local streams in Washington Parish.

Mineral Resources

The mineral resources in Washington Parish include sand and gravel deposits and clay *(19, 67)*. Sand and gravel deposits in the alluvial valleys are extracted by hydraulic mining. The deposits in the Citronelle Formation are extracted by dry-mining methods. From 1986 to 1987, Washington Parish ranked second in the state in the extraction of gravel and fifteenth in the extraction of sand *(36)*. The deposits of clay that are suitable for mining are in the High Terrace and Prairie Terrace.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

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, and 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-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, 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.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic)—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated)—Erosion much more rapid than geologic erosion, mainly as a result of the 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.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured 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.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of 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.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

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.

Percolation. The downward movement of water through 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.

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.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

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.

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.

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.

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 intake (in tables). The slow movement of water into the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

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.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

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 daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	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	38.0	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	67.4	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 SPECIFIED USES

Map unit	Extent of area	Cultivated crops	Pasture	Woodland	Urban uses	Intensive recreation areas
	Pct					
1. Ruston-Smithdale-----	26	Ruston: moderately well suited--low fertility, potential aluminum toxicity. Smithdale: poorly suited or not suited--slope, low fertility, potential aluminum toxicity.	Ruston: well suited. Smithdale: moderately well suited--slope.	Well suited[1]	Moderately well suited:[2] slope.	Ruston: well suited. Smithdale: moderately well suited--slope.
2. Savannah-Ruston-Tangi	37	Moderately well suited: slope, low fertility, potential aluminum toxicity, restricted rooting depth.	Well suited-------	Savannah: moderately well suited--restricted use of equipment, soil compaction, plant competition, restricted rooting depth. Ruston, Tangi: well suited.	Moderately well suited: wetness; moderately slow, moderate, and very slow permeability; moderate shrink-swell potential, low strength for roads and streets, slope.	Savannah, Tangi: moderately well suited--wetness, moderately slow and very slow permeability, slope. Ruston: well suited.
3. Myatt-Stough-Prentiss	9	Moderately well suited:[3] wetness, low fertility, potential aluminum toxicity, slope, restricted rooting depth, droughtiness.	Myatt: moderately well suited[3]--wetness, low fertility, slope, droughtiness, restricted rooting depth. Stough, Prentiss: well suited.	Myatt, Stough: moderately well suited--restricted use of equipment, seedling mortality, soil compaction, plant competition, restricted rooting depth. Prentiss: well suited.	Myatt, Stough: poorly suited[4]--wetness, flooding, moderately slow permeability, slope. Prentiss: moderately well suited--moderately slow permeability, wetness.	Myatt: poorly suited[4]--wetness, flooding, moderately slow permeability, slope. Prentiss, Stough: moderately well suited--wetness, moderately slow permeability.

See footnotes at end of table.

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR SPECIFIED USES--Continued

Map unit	Extent of area	Cultivated crops	Pasture	Woodland	Urban uses	Intensive recreation areas
	Pct					
4. Cahaba-Prentiss-Bassfield	9	Moderately well suited: slope, low fertility, potential aluminum toxicity, droughtiness, restricted rooting depth,	Well suited	Well suited	Moderately well suited: slope, wetness, moderately slow permeability, seepage, cutbanks cave easily.	Moderately well suited: slope, wetness, moderately slow permeability.
5. Arkabutla-Rosebloom-Jena	4	Poorly suited: flooding, wetness.	Poorly suited: flooding, wetness.	Moderately well suited: restricted use of equipment, moderate seedling mortality, plant competition, soil compaction.	Not suited: flooding, wetness.	Not suited: flooding, wetness.
6. Ouachita-Bibb-Jena	15	Poorly suited: flooding, wetness.	Poorly suited: flooding, wetness.	Moderately well suited: restricted use of equipment, moderate or severe seedling mortality, plant competition, soil compaction.	Not suited: flooding, wetness.	Not suited: flooding, wetness.

[1] The Smithdale soils in moderately steep areas are moderately well suited because of the slope.
[2] The Smithdale soils in moderately steep areas are poorly suited.
[3] The Myatt soils that flood frequently are poorly suited.
[4] The Myatt soils that flood frequently are not suited.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Aa	Abita silt loam, 0 to 2 percent slopes	1,185	0.3
Ab	Abita silt loam, 2 to 5 percent slopes	375	0.1
Ag	Angie silt loam, 1 to 5 percent slopes	970	0.2
AR	Arat muck	3,020	0.7
AT	Arkabutla, Rosebloom, and Jena soils, frequently flooded	17,885	4.1
Ba	Bassfield sandy loam, 1 to 3 percent slopes	9,760	2.3
Ca	Cahaba fine sandy loam, 1 to 5 percent slopes	12,425	2.9
Dp	Dumps	90	*
Fk	Fluker silt loam	1,770	0.4
Lt	Latonia fine sandy loam	2,625	0.6
Mt	Myatt fine sandy loam	11,605	2.7
My	Myatt fine sandy loam, frequently flooded	19,395	4.5
OB	Ouachita, Bibb, and Jena soils, frequently flooded	67,200	15.5
Pg	Pits	2,875	0.7
Pr	Prentiss fine sandy loam, 0 to 1 percent slopes	13,700	3.2
Ps	Prentiss fine sandy loam, 1 to 3 percent slopes	4,830	1.1
Rs	Ruston fine sandy loam, 1 to 3 percent slopes	26,430	6.1
Rt	Ruston fine sandy loam, 3 to 8 percent slopes	56,835	13.1
Sa	Savannah fine sandy loam, 1 to 3 percent slopes	85,775	19.9
Sh	Savannah fine sandy loam, 3 to 8 percent slopes	26,865	6.2
Sm	Smithdale fine sandy loam, 8 to 12 percent slopes	37,745	8.7
Sn	Smithdale fine sandy loam, 12 to 20 percent slopes	8,435	2.0
St	Stough fine sandy loam	12,840	3.0
Ta	Tangi silt loam, 1 to 3 percent slopes	5,750	1.3
Tg	Tangi silt loam, 3 to 8 percent slopes	610	0.1
Ww	Water	1,460	0.3
	Total	432,455	100.0

* Less than 0.1 percent.

TABLE 6.--LAND CAPABILITY CLASSES 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	Cotton lint	Soybeans	Bahiagrass	Common bermudagrass	Improved bermudagrass
		Bu	Lbs	Bu	AUM*	AUM*	AUM*
Aa-------------- Abita	IIw	80	---	30	7.5	5.0	11.0
Ab-------------- Abita	IIe	80	---	25	7.5	5.0	11.0
Ag-------------- Angie	IIIe	75	400	25	7.5	5.0	12.0
AR-------------- Arat	VIIIw	---	---	---	---	---	---
AT-------------- Arkabutla, Rosebloom and Jena	Vw	---	---	---	---	5.0	---
Ba-------------- Bassfield	IIe	80	---	25	8.0	6.0	14.0
Ca-------------- Cahaba	IIe	85	750	30	8.0	6.0	14.0
Dp**. Dumps							
Fk-------------- Fluker	IIw	80	---	25	7.5	6.0	11.5
Lt-------------- Latonia	IIs	75	---	25	8.5	6.0	14.0
Mt-------------- Myatt	IIIw	70	---	20	6.0	4.5	---
My-------------- Myatt	Vw	---	---	---	---	4.0	---
OB-------------- Ouachita, Bibb and Jena	Vw	---	---	---	---	5.0	---
Pg**. Pits							
Pr-------------- Prentiss	IIw	85	750	30	9.0	6.0	12.5
Ps-------------- Prentiss	IIe	80	750	30	9.0	6.0	12.5
Rs-------------- Ruston	IIe	70	650	30	8.0	5.5	12.0
Rt-------------- Ruston	IIIe	65	600	25	8.0	5.5	12.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Cotton lint	Soybeans	Bahiagrass	Common bermudagrass	Improved bermudagrass
		Bu	Lbs	Bu	AUM*	AUM*	AUM*
Sa-------------- Savannah	IIe	85	650	35	9.0	6.0	12.5
Sh-------------- Savannah	IIIe	80	600	30	8.5	5.5	12.0
Sm-------------- Smithdale	IVe	55	---	25	8.0	5.0	11.0
Sn-------------- Smithdale	VIe	---	---	---	7.5	4.5	9.0
St-------------- Stough	IIw	80	725	25	7.0	5.0	11.0
Ta-------------- Tangi	IIe	85	---	25	9.0	6.0	12.5
Tg-------------- Tangi	IIIe	80	---	20	8.5	5.5	12.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
Aa, Ab---------- Abita	11W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	100	11	Loblolly pine, slash pine, longleaf pine.
						Slash pine----------	95	12	
						Longleaf pine-------	---	---	
						Sweetgum------------	---	---	
						Southern red oak----	---	---	
						Water oak-----------	---	---	
Ag-------------- Angie	10W	Slight	Moderate	Slight	Severe	Loblolly pine-------	92	10	Loblolly pine, slash pine.
						Slash pine----------	---	---	
						Longleaf pine-------	---	---	
						Sweetgum------------	---	---	
AR-------------- Arat	5W	Slight	Severe	Severe	Slight	Water tupelo--------	50	5	Baldcypress.
						Baldcypress---------	50	3	
AT**:									
Arkabutla------	12W	Slight	Severe	Moderate	Moderate	Cherrybark oak------	105	12	Cherrybark oak, green ash, loblolly pine, sweetgum.
						Eastern cottonwood--	110	11	
						Green ash-----------	95	5	
						Loblolly pine-------	100	9	
						Nuttall oak---------	110	---	
						Sweetgum------------	100	10	
						Water oak-----------	100	7	
Rosebloom------	9W	Slight	Severe	Moderate	Severe	Cherrybark oak------	95	9	Cherrybark oak, green ash, Nuttall oak, water oak, willow oak, loblolly pine, sweetgum.
						Green ash-----------	95	5	
						Eastern cottonwood--	100	9	
						Nuttall oak---------	95	---	
						Water oak-----------	95	6	
						Willow oak----------	90	6	
						Sweetgum------------	95	8	
						American sycamore---	80	5	
Jena-----------	9W	Slight	Severe	Moderate	Moderate	Loblolly pine-------	100	9	Loblolly pine, slash pine, cherrybark oak, sweetgum.
						Sweetgum------------	90	7	
						Water oak-----------	80	5	
						Southern red oak----	---	---	
						White oak-----------	---	---	
						Slash pine----------	---	---	
Ba-------------- Bassfield	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	90	9	Loblolly pine, cherrybark oak, sweetgum, slash pine, Shumard oak.
						Cherrybark oak------	90	8	
						Shortleaf pine------	80	9	
						Sweetgum------------	90	7	
Ca-------------- Cahaba	9A	Slight	Slight	Slight	Moderate	Loblolly pine-------	87	9	Loblolly pine, slash pine, sweetgum, water oak, cherrybark oak, Shumard oak.
						Slash pine----------	91	12	
						Shortleaf pine------	70	8	
						Yellow poplar-------	---	---	
						Sweetgum------------	90	7	
						Southern red oak----	---	---	
						Water oak-----------	---	---	

See footnotes at end of table.

TABLE 7.--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: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Fk-------------- Fluker	11W	Slight	Moderate	Slight	Severe	Slash pine----------	90	11	Loblolly pine, slash pine.
						Loblolly pine-------	90	9	
						Longleaf pine-------	---	---	
						Sweetgum------------	90	7	
						Southern red oak----	---	---	
						Green ash-----------	---	---	
						Water oak-----------	90	6	
Lt-------------- Latonia	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	90	9	Loblolly pine, slash pine.
						Longleaf pine-------	70	6	
						Slash pine----------	90	11	
Mt, My---------- Myatt	9W	Slight	Severe	Severe	Severe	Loblolly pine-------	88	9	Loblolly pine, slash pine, sweetgum, water oak, Shumard oak.
						Slash pine----------	92	12	
						Sweetgum------------	92	8	
						Water oak-----------	86	6	
						Southern red oak----	---	---	
						White oak-----------	---	---	
						American sycamore---	---	---	
						Blackgum------------	---	---	
						Shumard oak---------	---	---	
OB**:									
Ouachita-------	11W	Slight	Severe	Moderate	Severe	Loblolly pine-------	100	9	Loblolly pine, cherrybark oak, Nuttall oak, shortleaf pine, water oak.
						Sweetgum------------	100	10	
						Eastern cottonwood--	100	9	
						Cherrybark oak------	100	10	
Bibb-----------	9W	Slight	Severe	Severe	Severe	Loblolly pine-------	90	9	Loblolly pine, sweetgum, Nuttall oak, willow oak.
						Sweetgum------------	90	7	
						Water oak-----------	90	6	
						Blackgum------------	---	---	
						Yellow poplar-------	---	---	
Jena-----------	9W	Slight	Severe	Moderate	Severe	Loblolly pine-------	100	9	Loblolly pine, slash pine, water oak, cherrybark oak, sweetgum.
						Sweetgum------------	90	7	
						Water oak-----------	80	5	
						Southern red oak----	---	---	
						White oak-----------	---	---	
						Slash pine----------	---	---	
Pr, Ps---------- Prentiss	9W	Slight	Slight	Slight	Moderate	Loblolly pine-------	88	9	Loblolly pine, slash pine.
						Shortleaf pine------	79	9	
						Sweetgum------------	90	7	
						Cherrybark oak------	90	8	
						White oak-----------	80	4	
Rs, Rt---------- Ruston	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	91	9	Loblolly pine, slash pine, longleaf pine.
						Slash pine----------	91	12	
						Longleaf pine-------	76	6	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Productivity class*	
Sa, Sh: Savannah	9W	Slight	Moderate	Slight	Moderate	Loblolly pine	88	9	Loblolly pine, slash pine, sweetgum, Shumard oak, cherrybark oak, water oak.
						Longleaf pine	78	7	
						Slash pine	88	11	
						Sweetgum	85	6	
Sm: Smithdale	9A	Slight	Slight	Slight	Slight	Loblolly pine	86	9	Loblolly pine, longleaf pine, slash pine.
						Longleaf pine	69	5	
						Slash pine	85	11	
Sn: Smithdale	9R	Moderate	Moderate	Slight	Slight	Loblolly pine	86	9	Loblolly pine, longleaf pine, slash pine.
						Longleaf pine	69	5	
						Slash pine	85	11	
St: Stough	9W	Slight	Moderate	Slight	Severe	Loblolly pine	90	9	Loblolly pine, slash pine, sweetgum, 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	Moderate	Slash pine	100	13	Loblolly pine, slash pine.
						Loblolly pine	109	12	
						Longleaf pine	---	---	
						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 8.--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
Aa-------------------- Abita	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Ab-------------------- Abita	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Ag-------------------- Angie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Slight.
AR-------------------- Arat	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
AT*:					
Arkabutla------------	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding, wetness.
Rosebloom------------	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Jena-----------------	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Ba-------------------- Bassfield	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Ca-------------------- Cahaba	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Dp*. Dumps					
Fk-------------------- Fluker	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Lt-------------------- Latonia	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty.
Mt-------------------- Myatt	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
My-------------------- Myatt	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
OB*:					
Ouachita	Severe: flooding.	Moderate: flooding, percs slowly.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding, too sandy.	Severe: wetness.	Severe: wetness, flooding.
Jena	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Pg*. Pits					
Pr Prentiss	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Moderate: droughty.
Ps Prentiss	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Moderate: droughty.
Rs, Rt Ruston	Slight	Slight	Moderate: slope.	Slight	Slight.
Sa, Sh Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
Sm Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Sn Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
St Stough	Severe: 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.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

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
Aa------------------ Abita	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ab------------------ Abita	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ag------------------ Angie	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AR------------------ Arat	Very poor.	Very poor.	Very poor.	Very poor.	---	Very poor.	Good	Fair	Very poor.	Very poor.	Good.
AT*:											
Arkabutla----------	Poor	Fair	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
Rosebloom----------	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Jena---------------	Poor	Fair	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
Ba------------------ Bassfield	Good	Good	Good	Good	Poor	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ca------------------ Cahaba	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Dp*. Dumps											
Fk------------------ Fluker	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Lt------------------ Latonia	Good	Good	Good	Good	Poor	Good	Very poor.	Very poor.	Good	Good	Very poor.
Mt, My-------------- Myatt	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
OB*:											
Ouachita-----------	Poor	Fair	Fair	Good	Poor	Good	Good	Fair	Fair	Good	Fair.
Bibb---------------	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Jena---------------	Poor	Fair	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
Pg*. Pits											
Pr, Ps-------------- Prentiss	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rs------------------ Ruston	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Rt------------------ Ruston	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Shrubs	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
Sa----------------- Savannah	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sh----------------- Savannah	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Sm----------------- Smithdale	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Sn----------------- 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.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." 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
Aa, Ab: Abita	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
Ag: Angie	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
AR: Arat	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding, excess humus.
AT*:					
Arkabutla	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding, wetness.
Rosebloom	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Jena	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Ba: Bassfield	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Ca: Cahaba	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Dp*. Dumps					
Fk: Fluker	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Lt: Latonia	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: droughty.
Mt: Myatt	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
My: Myatt	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
OB*:					
Ouachita	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OB*:					
Bibb	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Jena	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Pg*. Pits					
Pr, Ps Prentiss	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
Rs Ruston	Slight	Slight	Slight	Moderate: low strength.	Slight.
Rt Ruston	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Sa Savannah	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness, droughty.
Sh Savannah	Severe: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.	Moderate: wetness, droughty.
Sm Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Sn Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
St Stough	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	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.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "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
Aa------------------ Abita	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Ab------------------ Abita	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Ag------------------ Angie	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
AR------------------ Arat	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding, excess humus.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
AT*:					
Arkabutla----------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.
Rosebloom----------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Jena---------------	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding.	Good.
Ba------------------ Bassfield	Slight-----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: thin layer.
Ca------------------ Cahaba	Slight-----------	Severe: seepage.	Severe: seepage.	Slight-----------	Fair: thin layer.
Dp*. Dumps					
Fk------------------ Fluker	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Lt------------------ Latonia	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Mt------------------ Myatt	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
My------------------ Myatt	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--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
OB*:					
Ouachita	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding.	Fair: too clayey.
Bibb	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Jena	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding.	Good.
Pg*. Pits					
Pr, Ps Prentiss	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
Rs, Rt Ruston	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Sa, Sh Savannah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Sm Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Sn 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.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," 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	Sand	Gravel	Topsoil
Aa, Ab: Abita	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Ag: Angie	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
AR: Arat	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
AT*:				
Arkabutla	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Rosebloom	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Jena	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Ba: Bassfield	Good	Probable	Improbable: too sandy.	Good.
Ca: Cahaba	Good	Probable	Improbable: too sandy.	Fair: too clayey.
Dp*. Dumps				
Fk: Fluker	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Lt: Latonia	Good	Probable	Improbable: too sandy.	Fair: thin layer.
Mt, My: Myatt	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
OB*:				
Ouachita	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Jena	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Pg*. Pits				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Pr, Ps----------------- Prentiss	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Rs, Rt----------------- Ruston	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Sa, Sh----------------- Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Sm--------------------- Smithdale	Good------------------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Sn--------------------- Smithdale	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
St--------------------- Stough	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ta, Tg----------------- Tangi	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." 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	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
Aa----------------- Abita	Slight---------	Severe: piping, wetness.	Percs slowly---	Wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
Ab----------------- Abita	Moderate: slope.	Severe: piping, wetness.	Slope, percs slowly.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
Ag----------------- Angie	Moderate: slope.	Moderate: hard to pack, wetness.	Deep to water	Percs slowly, slope.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
AR----------------- Arat	Slight---------	Severe: ponding, piping.	Ponding, flooding, percs slowly.	Ponding, flooding, percs slowly.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
AT*:						
Arkabutla---------	Moderate: seepage.	Severe: wetness.	Flooding-------	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
Rosebloom---------	Moderate: seepage.	Severe: wetness.	Flooding-------	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
Jena--------------	Severe: seepage.	Severe: piping.	Deep to water	Flooding-------	Favorable------	Favorable.
Ba----------------- Bassfield	Severe: seepage.	Severe: piping.	Deep to water	Favorable------	Favorable------	Favorable.
Ca----------------- Cahaba	Severe: seepage.	Moderate: thin layer, piping.	Deep to water	Slope----------	Favorable------	Favorable.
Dp*. Dumps						
Fk----------------- Fluker	Moderate: seepage.	Severe: wetness, piping.	Percs slowly---	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Lt----------------- Latonia	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty-------	Too sandy------	Droughty.
Mt----------------- Myatt	Moderate: seepage.	Severe: piping, wetness.	Favorable------	Wetness--------	Wetness--------	Wetness.
My----------------- Myatt	Moderate: seepage.	Severe: piping, wetness.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
OB*:						
Ouachita	Slight	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
Bibb	Moderate: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
Jena	Severe: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
Pg*. Pits						
Pr, Ps: Prentiss	Moderate: seepage.	Severe: piping.	Favorable	Wetness, droughty.	Wetness, rooting depth.	Droughty, rooting depth.
Rs: Ruston	Moderate: seepage.	Severe: thin layer.	Deep to water	Favorable	Favorable	Favorable.
Rt: Ruston	Moderate: seepage, slope.	Severe: thin layer.	Deep to water	Slope	Favorable	Favorable.
Sa: Savannah	Moderate: seepage.	Severe: piping.	Favorable	Wetness, droughty.	Wetness, rooting depth.	Rooting depth.
Sh: Savannah	Moderate: seepage, slope.	Severe: piping.	Slope	Slope, wetness, droughty.	Wetness, rooting depth.	Rooting depth.
Sm, Sn: Smithdale	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
St: Stough	Slight	Moderate: piping, wetness.	Favorable	Wetness, droughty.	Erodes easily, wetness.	Wetness, erodes easily, droughty.
Ta: Tangi	Moderate: seepage.	Moderate: piping, wetness.	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.	Percs slowly, slope.	Slope, 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 14.--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	
Aa---------------- Abita	0-6	Silt loam--------	ML, CL-ML	A-4	100	100	90-100	70-90	15-30	NP-7
	6-32	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	100	100	95-100	80-95	20-40	4-20
	32-43	Clay loam, loam, silty clay loam.	CL, CH	A-6, A-7-6	100	100	95-100	80-95	35-55	20-35
	43-63	Clay loam, silty clay loam, loam.	CL	A-6, A-7-6	100	100	95-100	80-95	30-50	15-30
Ab---------------- Abita	0-4	Silt loam--------	ML, CL-ML	A-4	100	100	90-100	70-90	15-30	NP-7
	4-17	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	100	100	95-100	80-95	20-40	4-20
	17-46	Clay loam, loam, silty clay loam.	CL, CH	A-6, A-7-6	100	100	95-100	80-95	35-55	20-35
	46-60	Clay loam, silty clay loam, loam.	CL	A-6, A-7-6	100	100	95-100	80-95	30-50	15-30
Ag---------------- Angie	0-7	Silt loam--------	ML, CL-ML, CL	A-4	95-100	90-100	85-100	60-90	15-38	5-22
	7-62	Silty clay loam, silty clay, clay.	CH, CL	A-7-6	95-100	90-100	85-100	75-95	41-55	18-29
AR---------------- Arat	0-3	Muck-------------	PT	A-8	---	---	---	---	---	---
	3-12	Mucky silt loam, silt loam, silty clay loam.	ML, CL-ML, CL, OL	A-4, A-6	100	100	90-100	75-95	<40	NP-22
	12-70	Silty clay loam, silt loam, mucky silty clay loam.	CL, CL-ML	A-6, A-4, A-7-6	100	100	90-100	80-95	22-45	6-25
AT*:										
Arkabutla-------	0-5	Silt loam--------	CL, CL-ML	A-4, A-6	100	100	85-100	60-95	25-35	7-15
	5-62	Silty clay loam, loam, silt loam.	CL	A-6, A-7	100	100	85-100	70-90	30-45	12-25
Rosebloom-------	0-60	Silt loam--------	CL	A-4, A-6	100	100	90-100	80-95	28-40	9-20
Jena------------	0-7	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-4, A-2-4	100	100	60-85	25-55	<22	NP-5
	7-33	Silt loam, sandy loam, loam.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	100	100	55-90	25-70	<22	NP-5
	33-60	Fine sandy loam, sandy loam, loamy fine sand.	SM	A-2-4, A-4	100	100	50-80	20-50	---	NP
Ba---------------- Bassfield	0-11	Sandy loam-------	SM, ML	A-2, A-4	90-100	85-100	55-96	25-58	<20	NP-3
	11-41	Sandy loam, loam	SM, SC, SM-SC	A-2, A-4	90-100	85-100	60-92	30-50	<20	NP-10
	41-62	Loamy sand, sand	SP-SM, SM	A-2, A-3	90-100	80-100	65-85	5-20	<20	NP-3
Ca---------------- Cahaba	0-5	Fine sandy loam	SM	A-4, A-2-4	95-100	95-100	65-90	30-45	---	NP
	5-43	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	90-100	80-100	75-90	40-75	22-35	8-15
	43-60	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2-4	95-100	90-100	60-85	10-35	---	NP

See footnote at end of table.

TABLE 14.--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	
Dp*. Dumps										
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
	10-34	Silt loam, silty clay loam.	CL	A-6	100	100	95-100	80-95	20-40	10-20
	34-60	Loam, silt loam, sandy loam.	ML, CL, SM-SC, SC	A-4, A-6	100	100	70-90	36-75	10-30	3-14
Lt-- Latonia	0-4	Fine sandy loam	SM	A-2-4, A-4	90-100	85-100	60-75	30-50	---	NP
	4-26	Sandy loam, loam, fine sandy loam.	SM	A-2-4, A-4	90-100	85-100	60-85	30-50	---	NP
	26-60	Sand, loamy sand	SM, SP-SM	A-2-4	90-100	85-100	50-75	10-30	---	NP
Mt-- Myatt	0-16	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	95-100	95-100	60-90	30-70	<25	NP-5
	16-50	Sandy loam, sandy clay loam, clay loam.	SM, SC, ML, CL	A-4	95-100	95-100	80-100	40-80	<30	NP-10
	50-64	Sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-6, A-4, A-2	75-100	60-90	60-80	30-70	15-40	5-20
My-- Myatt	0-12	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	95-100	95-100	60-90	30-70	<25	NP-5
	12-50	Sandy loam, sandy clay loam, clay loam.	SM, SC, ML, CL	A-4	95-100	95-100	80-100	40-80	<30	NP-10
	50-65	Sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-6, A-4, A-2	75-100	60-90	60-80	30-70	15-40	5-20
OB*: Ouachita--------	0-14	Silt loam--------	ML, CL-ML, CL	A-4	100	100	85-95	55-85	<30	2-10
	14-65	Silt loam, loam, fine sandy loam.	ML, CL-ML, CL	A-4	100	100	85-95	55-85	<30	2-10
Bibb------------	0-19	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	95-100	90-100	60-90	30-60	<25	NP-7
	19-65	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	60-100	50-100	40-100	30-90	<30	NP-7
Jena------------	0-8	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-4, A-2-4	100	100	60-85	25-55	<22	NP-5
	8-37	Silt loam, sandy loam, loam.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	100	100	55-90	25-70	<22	NP-5
	37-60	Fine sandy loam, sandy loam, loamy fine sand.	SM	A-2-4, A-4	100	100	50-80	20-50	---	NP
Pg*. Pits										
Pr-- Prentiss	0-29	Fine sandy loam	SC, SM-SC, SM	A-4	100	100	65-85	36-50	<30	NP-10
	29-62	Loam, sandy loam, fine sandy loam.	CL-ML, CL, SC, SM-SC	A-6, A-4	100	100	70-100	40-75	20-35	4-12

See footnote at end of table.

TABLE 14.--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	
Ps---------------- Prentiss	0-23	Fine sandy loam	SC, SM-SC, SM	A-4	100	100	65-85	36-50	<30	NP-10
	23-60	Loam, sandy loam, fine sandy loam.	CL-ML, CL, SC, SM-SC	A-6, A-4	100	100	70-100	40-75	20-35	4-12
Rs---------------- Ruston	0-16	Fine sandy loam	SM, ML	A-4, A-2-4	85-100	78-100	65-100	30-75	<20	NP-3
	16-36	Sandy clay loam, loam, sandy loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	36-44	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	44-65	Sandy clay loam, loam, sandy loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-42	11-20
Rt---------------- Ruston	0-17	Fine sandy loam	SM, ML	A-4, A-2-4	85-100	78-100	65-100	30-75	<20	NP-3
	17-25	Sandy clay loam, loam, sandy loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	25-34	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	34-64	Sandy clay loam, loam, sandy loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-42	11-20
Sa---------------- Savannah	0-11	Fine sandy loam	SM, ML	A-2-4, A-4	98-100	90-100	60-100	30-65	<25	NP-4
	11-23	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	23-62	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19
Sh---------------- Savannah	0-7	Fine sandy loam	SM, ML	A-2-4, A-4	98-100	90-100	60-100	30-65	<25	NP-4
	7-23	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	23-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19
Sm---------------- Smithdale	0-15	Fine sandy loam	SM, SM-SC	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	15-54	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	54-70	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
Sn---------------- Smithdale	0-12	Fine sandy loam	SM, SM-SC	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	12-48	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	48-60	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
St---------------- Stough	0-4	Fine sandy loam	SM-SC, SM, ML, CL-ML	A-4	100	100	65-85	35-65	<25	NP-7
	4-20	Loam, fine sandy loam, sandy loam.	ML, CL, CL-ML	A-4	100	100	75-95	50-75	<25	NP-8
	20-64	Sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	100	100	65-90	40-65	25-40	8-15

See footnote at end of table.

TABLE 14.--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	
Ta---------------- Tangi	0-7	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	80-95	<30	NP-7
	7-32	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	95-100	80-95	20-35	8-18
	32-38	Clay loam, silty clay loam, loam.	CL, SC	A-6, A-7-6	100	100	80-95	40-80	25-49	11-25
	38-67	Clay, clay loam, sandy clay loam.	CL, CH, SC	A-7-6, A-7-5	100	100	85-95	45-85	41-70	16-38
Tg---------------- Tangi	0-7	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	80-95	<30	NP-7
	7-24	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	95-100	80-95	20-35	8-18
	24-37	Clay loam, silty clay loam, loam.	CL, SC	A-6, A-7-6	100	100	80-95	40-80	25-49	11-25
	37-72	Clay, clay loam, sandy clay loam.	CL, CH, SC	A-7-6, A-7-5	100	100	85-95	45-85	41-70	16-38

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--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
Aa-----------------Abita	0-6	2-12	1.35-1.65	0.6-2.0	0.16-0.23	3.6-7.3	Low----------	0.49	5	.5-4
	6-32	12-32	1.35-1.65	0.2-0.6	0.19-0.21	3.6-7.3	Low----------	0.43		
	32-43	20-45	1.35-1.70	0.06-0.2	0.15-0.18	4.5-6.5	Moderate----	0.37		
	43-63	20-40	1.35-1.70	0.06-0.2	0.15-0.18	5.1-7.8	Moderate----	0.37		
Ab-----------------Abita	0-4	2-12	1.35-1.65	0.6-2.0	0.16-0.23	3.6-7.3	Low----------	0.49	5	.5-4
	4-17	12-32	1.35-1.65	0.2-0.6	0.19-0.21	3.6-7.3	Low----------	0.43		
	17-46	20-45	1.35-1.70	0.06-0.2	0.15-0.18	4.5-6.5	Moderate----	0.37		
	46-60	20-40	1.35-1.70	0.06-0.2	0.15-0.18	5.1-7.8	Moderate----	0.37		
Ag-----------------Angie	0-7	4-18	1.35-1.65	0.6-2.0	0.18-0.24	4.5-6.5	Low----------	0.49	5	.5-2
	7-62	35-60	1.20-1.60	0.06-0.2	0.16-0.22	3.6-6.0	High---------	0.32		
AR-----------------Arat	0-3	---	0.05-0.25	2.0-6.0	0.20-0.50	4.5-5.5	Low----------	----	---	30-90
	3-12	10-32	0.25-1.00	0.6-2.0	0.18-0.23	4.5-5.5	Low----------	0.43		
	12-70	14-35	0.25-1.00	0.06-0.2	0.18-0.20	4.5-5.5	Low----------	0.37		
AT*:										
Arkabutla--------	0-5	5-25	1.40-1.50	0.6-2.0	0.20-0.22	3.6-6.0	Low----------	0.43	5	1-3
	5-62	20-35	1.45-1.55	0.6-2.0	0.18-0.21	3.6-6.0	Low----------	0.32		
Rosebloom--------	0-60	18-25	1.40-1.55	0.6-2.0	0.2-0.22	3.6-5.5	Low----------	0.43	5	1-3
Jena-------------	0-7	10-20	1.30-1.70	0.6-2.0	0.12-0.20	4.5-6.0	Low----------	0.28	5	.5-2
	7-33	10-18	1.30-1.70	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.28		
	33-60	5-20	1.35-1.65	2.0-6.0	0.08-0.14	4.5-5.5	Low----------	0.24		
Ba-----------------Bassfield	0-11	4-10	1.40-1.50	2.0-6.0	0.10-0.15	4.5-5.5	Low----------	0.20	4	.5-3
	11-41	8-18	1.45-1.55	2.0-6.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	41-62	1-7	1.40-1.50	6.0-20	0.05-0.08	4.5-5.5	Very low----	0.17		
Ca-----------------Cahaba	0-5	7-17	1.35-1.60	2.0-6.0	0.10-0.14	4.5-6.0	Low----------	0.24	5	.5-2
	5-43	18-35	1.35-1.60	0.6-2.0	0.12-0.20	4.5-6.0	Low----------	0.28		
	43-60	4-20	1.40-1.70	2.0-20	0.05-0.10	4.5-6.0	Low----------	0.24		
Dp*. Dumps										
Fk-----------------Fluker	0-4	2-12	1.35-1.65	0.6-2.0	0.14-0.24	3.6-6.0	Low----------	0.49	3	.5-4
	4-10	6-18	1.35-1.65	0.6-2.0	0.20-0.24	3.6-6.0	Low----------	0.49		
	10-34	18-33	1.35-1.65	0.6-2.0	0.20-0.24	3.6-6.0	Low----------	0.43		
	34-60	6-22	1.45-1.90	0.06-0.2	0.01-0.10	3.6-6.0	Low----------	0.32		
Lt-----------------Latonia	0-4	10-20	1.40-1.50	2.0-6.0	0.10-0.15	4.5-5.5	Low----------	0.20	4	.5-5
	4-26	10-16	1.40-1.50	2.0-6.0	0.10-0.15	4.5-6.0	Low----------	0.20		
	26-60	3-10	1.40-1.50	6.0-20	0.05-0.10	4.5-5.5	Very low----	0.17		
Mt-----------------Myatt	0-16	7-20	1.30-1.60	0.6-2.0	0.11-0.20	3.6-6.0	Low----------	0.28	5	.5-4
	16-50	18-35	1.30-1.50	0.2-2.0	0.12-0.20	3.6-5.5	Low----------	0.28		
	50-64	7-30	1.30-1.50	0.2-2.0	0.10-0.20	3.6-5.5	Low----------	0.24		
My-----------------Myatt	0-12	7-20	1.30-1.60	0.6-2.0	0.11-0.20	3.6-6.0	Low----------	0.28	5	.5-4
	12-50	18-35	1.30-1.50	0.2-2.0	0.12-0.20	3.6-5.5	Low----------	0.28		
	50-65	7-30	1.30-1.50	0.2-2.0	0.10-0.20	3.6-5.5	Low----------	0.24		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	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
OB*:										
Ouachita--------	0-14	8-25	1.35-1.60	0.6-2.0	0.15-0.22	4.5-6.0	Low---------	0.37	5	1-4
	14-65	8-25	1.35-1.60	0.6-2.0	0.15-0.22	4.5-6.0	Low---------	0.37		
Bibb------------	0-19	2-18	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low---------	0.20	5	.5-5
	19-65	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	Low---------	0.37		
Jena------------	0-8	10-20	1.30-1.70	0.6-2.0	0.12-0.20	4.5-6.0	Low---------	0.28	5	.5-2
	8-37	10-18	1.30-1.70	0.6-2.0	0.10-0.20	4.5-5.5	Low---------	0.28		
	37-60	5-20	1.35-1.65	2.0-6.0	0.08-0.14	4.5-5.5	Low---------	0.24		
Pg*. Pits										
Pr--------------- Prentiss	0-29	5-18	1.50-1.60	0.6-2.0	0.12-0.16	4.5-5.5	Low---------	0.28	3	1-3
	29-62	10-20	1.65-1.75	0.2-0.6	0.06-0.09	4.5-5.5	Low---------	0.24		
Ps--------------- 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		
Rs--------------- Ruston	0-16	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low---------	0.28	5	.5-2
	16-36	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low---------	0.28		
	36-44	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low---------	0.32		
	44-65	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low---------	0.28		
Rt--------------- Ruston	0-17	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low---------	0.28	5	.5-2
	17-25	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low---------	0.28		
	25-34	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low---------	0.32		
	34-64	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low---------	0.28		
Sa--------------- Savannah	0-11	3-16	1.50-1.60	0.6-2.0	0.13-0.16	3.6-5.5	Low---------	0.24	3	.5-3
	11-23	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low---------	0.28		
	23-62	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low---------	0.24		
Sh--------------- Savannah	0-7	3-16	1.50-1.60	0.6-2.0	0.13-0.16	3.6-5.5	Low---------	0.24	3	.5-3
	7-23	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low---------	0.28		
	23-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low---------	0.24		
Sm--------------- Smithdale	0-15	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28	5	.5-2
	15-54	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low---------	0.24		
	54-70	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28		
Sn--------------- Smithdale	0-12	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28	5	.5-2
	12-48	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low---------	0.24		
	48-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low---------	0.28		
St--------------- Stough	0-4	5-15	1.40-1.55	0.6-2.0	0.12-0.18	3.6-5.5	Low---------	0.28	3	1-4
	4-20	8-18	1.45-1.60	0.2-0.6	0.07-0.11	3.6-5.5	Low---------	0.37		
	20-64	5-27	1.55-1.65	0.2-0.6	0.07-0.11	4.5-5.5	Low---------	0.37		
Ta--------------- Tangi	0-7	2-12	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low---------	0.49	3	.5-5
	7-32	18-30	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low---------	0.43		
	32-38	20-35	1.45-1.85	0.06-0.2	0.08-0.14	4.5-6.0	Moderate----	0.32		
	38-67	35-55	1.40-1.80	<0.06	0.08-0.14	4.5-6.0	Moderate----	0.28		
Tg--------------- Tangi	0-7	2-12	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low---------	0.49	3	.5-5
	7-24	18-30	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low---------	0.43		
	24-37	20-35	1.45-1.85	0.06-0.2	0.08-0.14	4.5-6.0	Moderate----	0.32		
	37-72	35-55	1.40-1.80	<0.06	0.08-0.14	4.5-6.0	Moderate----	0.28		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. 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				
Aa, Ab: Abita	C	None	---	---	1.5-3.0	Apparent	Dec-Apr	High	Moderate.
Ag: Angie	D	None	---	---	3.0-5.0	Apparent	Dec-Apr	High	Moderate.
AR: Arat	D	Frequent	Very long	Jan-Dec	+3-0.5	Apparent	Jan-Dec	High	Moderate.
AT*:									
Arkabutla	C	Frequent	Brief to very long.	Jan-Apr	1.0-1.5	Apparent	Jan-Apr	High	High.
Rosebloom	D	Frequent	Brief to very long.	Jan-Mar	0-1.0	Apparent	Jan-Mar	High	Moderate.
Jena	B	Frequent	Very brief to long.	Dec-Apr	>6.0	---	---	Low	High.
Ba: Bassfield	B	None	---	---	>6.0	---	---	Low	Moderate.
Ca: Cahaba	B	None	---	---	>6.0	---	---	Moderate	Moderate.
Dp*. Dumps									
Fk: Fluker	C	None	---	---	0.5-1.5	Perched	Dec-Apr	High	High.
Lt: Latonia	B	None	---	---	>6.0	---	---	Low	Moderate.
Mt: Myatt	D	Rare	---	---	0-1.0	Apparent	Nov-Apr	High	High.
My: Myatt	D	Frequent	Brief	Nov-Mar	0-1.0	Apparent	Nov-Apr	High	High.
OB*:									
Ouachita	C	Frequent	Brief to long.	Dec-May	>6.0	---	---	Moderate	Moderate.
Bibb	D	Frequent	Brief to long.	Dec-May	0.5-1.5	Apparent	Dec-Apr	High	Moderate.
Jena	B	Frequent	Brief to long.	Dec-Apr	>6.0	---	---	Low	High.
Pg*. Pits									

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Pr, Ps------------ Prentiss	C	None--------	---	---	2.0-2.5	Perched	Jan-Mar	Moderate	High.
Rs, Rt------------ Ruston	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
Sa, Sh------------ Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	High.
Sm, Sn------------ Smithdale	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
St---------------- Stough	C	None--------	---	---	1.0-1.5	Perched	Jan-Apr	Moderate	High.
Ta, Tg------------ Tangi	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 17.--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	Extractable phosphorus	Exchangeable bases: Ca	Exchangeable bases: Mg	Exchangeable bases: K	Exchangeable bases: Na	Exchangeable bases: Al	Exchangeable bases: 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	--------Millequivalents/100 grams of soil------									Pct	Pct	Pct	
Abita silt loam:[1,2] (S88LA117-1)	Ap	0-6	1.07	5.0	19	0.7	0.2	0.1	0.0	1.1	1.3	5.4	6.4	3.4	15.6	0.0	32.4	3.5
	BA	6-18	0.16	4.5	11	0.6	0.5	0.0	0.0	6.7	0.0	9.0	10.1	7.8	10.9	0.0	85.9	1.2
	B/E	18-25	0.04	4.6	8	0.4	0.7	0.0	0.0	6.5	0.0	10.8	11.9	7.6	9.2	0.0	85.5	0.6
	Bt	25-32	0.00	4.6	<5	0.2	0.9	0.0	0.0	5.8	1.6	8.4	9.5	8.5	11.6	0.0	68.2	0.2
	Btg1	32-43	0.00	4.7	7	0.2	2.1	0.1	0.1	9.5	0.0	15.0	17.5	12.0	14.3	0.6	79.2	0.1
	Btg2	43-63	0.00	4.8	11	0.3	2.8	0.1	0.1	10.4	1.4	16.8	20.1	15.1	16.4	0.5	68.9	0.1
Angie silt loam:[2] (S88LA117-2)	Ap	0-3	1.19	5.1	0	0.8	0.2	0.0	0.0	1.3	0.1	5.4	6.4	2.4	15.6	0.0	54.2	4.0
	E	3-7	0.12	4.9	0	0.4	0.2	0.0	0.0	1.3	0.3	1.8	2.4	2.2	25.0	0.0	59.1	2.0
	Bt1	7-16	0.10	5.0	8	1.7	1.5	0.1	0.0	3.8	0.2	7.2	10.5	7.3	31.4	0.0	52.1	1.1
	Bt2	16-23	0.10	4.8	24	2.8	3.9	0.3	0.1	10.3	0.1	19.8	26.9	17.5	26.4	0.4	58.9	71.8
	Bt3	23-44	0.00	4.9	24	2.3	4.2	0.3	0.1	11.2	0.0	19.8	26.7	18.1	25.8	0.4	61.9	54.8
	Btg	44-62	0.00	5.0	17	0.4	0.9	0.0	0.1	10.3	0.0	16.8	18.2	11.7	7.7	0.5	88.0	44.4
Arat muck:[2,3] (S85LA117-2)	Oa	0-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	A	3-12	3.15	4.5	142	5.6	1.9	0.3	0.4	5.1	0.1	22.4	30.6	13.4	26.8	1.3	38.1	2.9
	Cg1	12-45	3.28	4.6	145	7.9	1.9	0.4	0.3	3.6	0.6	19.8	30.3	14.7	34.7	1.0	24.5	4.2
	Cg2	45-70	4.39	4.6	61	6.4	1.9	0.3	0.4	3.9	1.0	25.6	34.5	13.9	25.8	1.2	28.3	3.6
Arkabutla silt loam:[2,4] (S86LA117-14)	A	0-5	2.40	4.3	16	4.0	1.9	0.3	0.1	6.3	0.3	18.0	24.3	12.9	25.9	0.4	48.8	2.1
	Bw	5-16	0.85	4.3	<5	0.7	0.5	0.3	0.1	13.7	0.9	22.8	24.4	16.2	6.6	0.4	84.6	1.4
	Bg1	16-41	1.16	4.2	<5	0.9	0.7	0.3	0.1	13.9	0.9	22.8	24.8	16.8	8.1	0.4	82.7	1.3
	Bg2	41-62	0.46	4.4	<5	0.3	0.4	0.2	0.1	13.0	1.0	20.4	21.4	15.0	4.7	0.5	86.7	0.8
Bibb fine sandy loam:[2,5] (S86LA117-12)	A	0-6	4.08	4.6	34	0.7	0.3	0.1	0.1	2.7	0.7	16.8	18.0	4.6	6.7	0.6	58.7	2.3
	Ag	6-19	2.93	4.8	16	0.5	0.3	0.0	0.0	2.0	0.8	12.6	13.4	3.6	6.0	0.0	55.6	1.7
	Cg1	19-32	2.58	4.7	9	0.4	0.2	0.0	0.0	2.3	0.5	10.2	10.8	3.4	5.6	0.0	67.6	2.0
	Cg2	32-47	1.78	4.8	<5	0.4	0.2	0.0	0.0	2.2	0.4	8.4	9.0	3.2	6.7	0.0	68.7	2.0
	Cg2	47-65	0.72	4.8	<5	0.3	0.1	0.0	0.0	2.2	0.4	5.4	5.8	3.0	6.9	0.0	73.3	3.0
Fluker silt loam:[2,6] (S86LA117-10)	Ap	0-4	2.93	4.5	7	1.0	0.5	0.2	0.1	2.7	0.3	13.2	15.0	4.8	12.0	0.7	56.3	2.0
	Bw	4-10	0.41	4.7	<5	0.5	0.2	0.0	0.0	2.5	0.5	4.8	5.5	3.7	12.7	0.0	67.6	2.5
	Bt1	10-18	0.19	4.8	<5	0.5	0.2	0.0	0.0	2.3	0.3	4.8	5.5	3.3	12.7	0.0	69.7	2.5
	Bt2	18-28	0.24	4.8	<5	0.5	0.3	0.0	0.0	2.0	0.6	3.6	4.4	3.4	18.2	0.0	58.8	1.7
	B/E	28-34	0.28	4.9	<5	0.6	0.3	0.0	0.0	2.5	0.5	6.6	7.5	3.9	12.0	0.0	64.1	2.0
	2Btx1	34-42	0.19	5.0	<5	0.7	0.5	0.0	0.1	3.8	0.4	8.4	9.7	5.5	13.4	1.0	69.1	1.4
	2Btx2	42-60	0.06	5.0	<5	0.6	0.4	0.0	0.0	2.5	0.3	4.2	5.2	3.8	19.2	0.0	65.8	1.5

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Extractable phosphorus	Exchangeable bases Ca	Exchangeable bases Mg	Exchangeable bases K	Exchangeable bases 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	--------Millequivalents/100 grams of soil-------									Pct	Pct	Pct	
Jena fine sandy loam:[7]	Ap	0-8	1.22	5.2	44	2.9	0.5	2.0	0.0	0.9	0.3	3.0	8.4	6.6	64.3	0.0	13.6	5.8
(S88LA117-9)	Bw1	8-22	0.00	5.6	49	1.9	0.3	1.0	0.0	0.4	0.0	0.6	3.8	3.6	84.2	0.0	11.1	6.3
	Bw2	22-32	0.10	5.2	91	3.6	0.3	0.1	0.0	0.7	0.0	1.8	5.8	4.7	69.0	0.0	14.9	12.0
	Bw3	32-46	0.01	5.2	175	6.0	0.3	0.1	0.0	0.9	0.3	3.6	10.0	7.6	64.0	0.0	11.8	20.0
	C	46-63	0.00	5.1	141	3.4	0.2	0.1	0.0	0.9	0.0	1.8	5.5	4.6	67.3	0.0	19.6	17.0
Latonia fine sandy loam:[2,8]	Ap	0-4	4.30	5.0	6	1.2	0.2	0.1	0.0	1.5	0.4	9.5	11.0	3.4	13.6	0.0	44.1	6.0
(S85LA117-7)	BA	4-10	0.24	5.6	<5	1.0	0.3	0.1	0.1	0.4	0.2	2.3	3.8	2.1	39.5	2.6	19.0	3.3
	Bt	10-26	0.10	5.0	<5	0.6	0.3	0.1	0.1	1.6	0.3	4.0	5.1	3.0	21.6	2.0	28.1	2.0
	BC	26-34	0.00	5.0	7	0.5	0.2	0.1	0.0	0.9	0.5	2.1	2.9	2.2	27.6	0.0	81.8	2.5
	2C	34-60	0.00	5.3	<5	0.5	0.1	0.1	0.0	0.2	0.2	0.6	1.3	1.1	53.8	0.0	18.2	5.0
Myatt fine sandy loam:[2,9]	A	0-8	1.47	4.3	<5	0.7	0.1	0.0	0.0	2.0	0.2	4.8	5.6	3.0	14.3	0.0	66.7	7.0
(S86LA117-9)	Eg	8-16	1.43	4.2	<5	0.6	0.1	0.0	0.0	2.0	0.4	4.8	5.5	3.1	12.7	0.0	64.5	6.0
	Btg	16-38	0.19	4.8	<5	0.6	0.2	0.0	0.0	3.1	0.7	6.0	6.8	4.6	11.8	0.0	67.4	3.0
	BCg	38-50	0.01	5.0	<5	0.7	0.5	0.0	0.1	5.6	0.4	7.8	9.1	7.3	14.3	1.1	76.7	1.4
	Cg	50-64	0.01	5.1	<5	0.5	0.5	0.0	0.1	3.1	0.5	7.2	8.3	4.7	13.3	1.2	66.0	1.0
Ouachita silt loam:[2,10]	A1	0-4	3.55	4.5	16	0.7	0.6	0.2	0.0	2.0	1.0	15.0	16.5	4.5	9.1	0.0	44.4	1.2
(S86LA117-11)	A2	4-14	0.72	4.7	<5	0.4	0.2	0.0	0.0	2.0	0.6	5.4	6.0	3.2	10.0	0.0	62.5	2.0
	Bw1	14-32	0.15	4.7	<5	0.4	0.2	0.0	0.0	2.9	0.7	7.2	7.8	4.2	7.7	0.0	69.0	2.0
	Bw2	32-42	0.15	4.7	7	0.4	0.3	0.0	0.0	3.1	0.5	6.0	6.7	4.3	10.4	0.0	72.1	1.3
	Bw3	42-65	0.15	4.8	<5	0.5	0.4	0.0	0.0	3.4	0.6	4.2	5.1	4.9	17.6	0.0	69.4	1.3
Prentiss fine sandy loam:[2]	Ap	0-6	2.49	4.9	<5	1.1	0.3	0.1	0.0	1.8	0.3	10.7	12.2	3.6	12.3	0.0	50.0	3.7
(S85LA117-8)	Bt1	6-22	0.19	4.7	<5	0.8	0.2	0.1	0.0	1.9	0.6	4.7	5.8	3.6	19.0	0.0	52.8	4.0
	Bt2	22-29	0.01	4.8	<5	0.6	0.4	0.1	0.0	3.6	0.3	5.9	7.0	5.0	15.7	0.0	72.0	1.5
	Btx1	29-48	0.01	5.0	<5	0.6	0.3	0.1	0.0	2.3	0.2	3.6	4.6	3.5	21.7	0.0	65.7	2.0
	Btx2	48-62	0.00	4.9	<5	0.5	0.2	0.1	0.0	2.0	0.2	2.5	3.3	3.0	24.2	0.0	66.7	2.5
Rosebloom silt loam:[2,11]	A	0-7	2.53	4.3	36	4.9	1.9	0.3	0.0	3.2	1.0	15.6	22.7	11.3	31.3	0.0	28.3	2.6
(S86LA117-13)	Bg1	7-22	1.12	4.4	21	2.3	1.0	0.1	0.0	9.7	0.5	17.4	20.8	13.6	16.3	0.0	71.3	2.3
	Bg2	22-38	0.54	4.6	16	2.5	1.2	0.2	0.1	9.7	0.5	15.0	19.0	14.2	21.1	0.5	68.3	2.1
	Bg3	38-60	0.28	4.5	6	2.5	1.3	0.2	0.1	9.9	0.5	13.2	17.3	14.5	23.7	0.6	68.3	1.9

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Extractable phosphorus	Exchangeable bases: 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	--------Millequivalents/100 grams of soil-------									Pct	Pct	Pct	
Savannah fine sandy loam:[2] (S85LA117-3)	Ap	0-5	2.49	5.1	8	1.8	0.5	0.2	0.0	1.2	1.4	11.4	13.9	5.1	18.0	0.0	23.5	3.6
	E	5-11	0.72	4.8	<5	0.6	0.2	0.1	0.0	1.6	1.0	6.9	7.8	3.5	11.5	0.0	45.7	3.0
	Bt	11-23	0.28	4.8	<5	0.7	0.4	0.1	0.0	3.2	0.8	8.7	9.9	5.2	12.1	0.0	61.5	1.8
	Btx1	23-34	0.00	4.9	<5	0.5	0.7	0.1	0.0	3.5	1.1	9.3	10.6	5.9	12.3	0.0	59.3	0.7
	Btx2	34-47	0.00	5.0	<5	0.5	0.8	0.1	0.0	3.3	1.1	9.1	10.5	5.8	13.3	0.0	56.9	0.6
	Btx3	47-62	0.00	5.1	<5	0.5	1.0	0.1	0.0	3.0	0.4	8.4	10.5	5.0	16.0	0.0	60.0	0.5
Smithdale fine sandy loam:[2] (S85LA117-4)	A	0-7	1.61	5.9	7	3.4	0.6	0.2	0.0	0.0	0.8	6.8	11.0	5.0	38.2	0.0	0.0	5.7
	E	7-15	0.63	5.6	<5	1.0	0.3	0.2	0.0	0.5	0.2	3.8	5.3	2.2	28.3	0.0	22.7	3.3
	Bt1	15-28	0.19	5.2	<5	2.2	0.9	0.1	0.0	0.4	0.2	5.7	8.9	3.8	36.0	0.0	10.5	2.4
	Bt2	28-54	0.00	4.8	<5	0.7	0.6	0.2	0.0	2.1	0.7	7.6	9.1	4.3	16.5	0.0	48.8	1.2
	Bt3	54-70	0.01	4.7	<5	0.8	0.4	0.0	0.0	1.2	0.7	4.6	5.8	3.1	20.7	0.0	38.7	2.0
Stough fine sandy loam:[2,12] (S86LA117-5)	A	0-4	2.31	4.1	6	0.7	0.1	0.0	0.0	2.7	0.9	11.4	12.2	4.4	6.6	0.0	61.4	7.0
	B/E	4-8	0.54	4.2	<5	0.6	0.1	0.0	0.0	1.8	0.2	4.2	4.9	2.7	14.3	0.0	66.7	6.0
	Bt1	8-14	0.15	4.4	<5	0.6	0.1	0.0	0.0	2.3	0.5	4.2	4.9	3.5	14.3	0.0	65.7	6.0
	Bt2	14-20	0.10	4.5	<5	0.6	0.1	0.0	0.0	2.5	0.3	4.8	5.5	3.5	12.7	0.0	71.4	6.0
	Btx1	20-29	0.15	4.6	<5	0.5	0.2	0.0	0.0	2.5	0.2	4.8	5.5	3.4	12.7	0.0	73.5	2.5
	Btx2	29-47	0.00	4.9	<5	0.6	0.4	0.1	0.0	2.9	0.3	6.0	7.1	4.3	15.5	0.0	67.4	1.5
	Btx3	47-64	0.00	4.9	<5	0.5	0.2	0.0	0.0	2.3	0.3	4.8	5.5	3.3	12.7	0.0	69.7	2.5

[1] This pedon is a taxadjunct to the Abita series because the base saturation is less than 35 percent.

[2] This is the typical pedon for the series in the survey area.

[3] This pedon is a taxadjunct to the Arat series because the reaction is lower throughout the profile and the phosphorus content is higher than allowed in the series range.

[4] This pedon is similar to the Arkabutla series, but the reaction throughout the profile is 0.2 pH unit lower than allowed in the series range. This difference is within the normal error of observation range.

[5] This pedon is similar to the Bibb series, but the content of organic matter in the A horizon is slightly higher than allowed in the series range. This difference is within the normal error of observation range.

[6] This pedon is a taxadjunct to the Fluker series because the base saturation is less than 35 percent.

[7] This pedon is a taxadjunct to the Jena series because the base saturation between a depth of 10 and 40 inches is slightly more than 60 percent.

[8] This pedon is similar to the Latonia series, but the reaction of the Bw horizon is 0.1 pH unit higher than allowed in the series range. This difference is within the normal error of observation range.

[9] This pedon is similar to the Myatt series, but the reaction of the A and E horizons is 0.2 and 0.3 pH units, respectively, lower than allowed in the series range. These differences are within the normal error of observation range.

[10] This pedon is similar to the Ouachita series, but the content of organic matter in the A horizon is slightly higher than allowed in the series range. This difference is within the normal error of observation range.

[11] This pedon is similar to the Rosebloom series, but the reaction of the A and Bg1 horizons is 0.2 and 0.1 pH units, respectively, lower than allowed in the series range. These differences are within the normal error of observation range.

[12] This pedon is similar to the Stough series, but the reaction of the Ap, B/E, and Bt1 horizons are slightly lower than allowed in the series range. These differences are within the normal error of observation range.

TABLE 18.--PHYSICAL TEST DATA FOR SELECTED SOILS

(The symbol < means less than. Dashes indicate that analyses were not made)

Soil name and sample number	Hori- zon	Depth	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25- mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2.0-0.5 mm)	Silt (0.25-0.002 mm)	Clay (0.002 mm)	Water retained: 1/3 bar	15 bar	WRD	Bulk density: Air-dry	Oven-dry	Field moisture
		In	---Pct---								----Pct (wt)----			g/cm3	g/cm3	g/cm3
Bassfield sandy loam:[1] (S85LA117-2)	Ap	0-5	0.5	3.8	29.4	32.1	8.1	73.9	22.1	4.0	16.5	3.2	13.3	1.59	1.60	1.54
	A	5-11	0.1	2.3	26.0	27.7	5.8	61.9	27.9	10.2	17.1	5.2	11.9	1.64	1.67	1.61
	Bt1	11-22	0.1	2.2	24.7	25.2	0.0	52.2	34.1	13.7	20.3	7.3	13.0	1.60	1.67	1.56
	Bt2	22-34	0.5	2.1	24.4	25.2	20.5	72.7	12.3	15.0	21.7	7.2	14.5	1.61	1.67	1.54
	Bt2	34-41	0.1	2.9	28.8	30.5	6.1	68.4	23.9	7.7	13.5	3.4	10.1	1.75	1.76	1.68
	C	41-62	0.3	2.8	34.7	36.1	8.3	82.2	14.8	3.0	6.4	2.3	4.1	1.68	1.71	1.64
Ruston fine sandy loam:[1] (S85LA117-1)	Ap	0-6	0.5	9.5	35.6	11.6	1.9	59.1	38.2	2.7	20.6	2.1	18.5	1.51	1.52	1.45
	E	6-16	0.6	7.6	33.3	11.0	1.4	53.9	35.1	11.0	20.4	4.5	15.9	1.71	1.72	1.69
	Bt1	16-26	0.6	6.7	30.3	10.1	1.2	48.9	30.6	20.5	22.1	8.3	13.8	1.80	1.81	1.74
	Bt2	26-36	1.0	8.1	36.8	11.0	1.3	58.2	25.6	16.2	19.6	6.8	12.8	1.93	1.93	1.85
	B/E	36-44	0.6	9.2	44.0	12.4	0.0	66.2	24.8	9.0	14.7	3.8	10.9	1.95	1.97	1.94
	B't	44-65	0.7	7.7	44.9	13.5	1.5	68.3	13.8	17.9	15.0	6.4	8.6	1.84	1.86	1.78
Tangi silt loam:[2] (S75LA117-2)	Ap	0-7	---	---	---	---	---	---	---	---	22.7	5.3	17.4		1.59	1.56
	Bt1	7-12	---	---	---	---	---	---	---	---	29.1	10.8	18.3		1.65	1.54
	Bt2	12-24	---	---	---	---	---	---	---	---	26.4	11.2	15.2		1.64	1.53
	Bt3	24-32	---	---	---	---	---	---	---	---	28.7	---	---		1.62	1.56
	Bt4	32-37	---	---	---	---	---	---	---	---	25.0	---	---		1.64	1.57
	2Btx1	37-47	---	---	---	---	---	---	---	---	22.7	---	---		1.70	1.65
	2Btx2	47-58	---	---	---	---	---	---	---	---	26.4	---	---		1.68	1.62
	2Btx3	58-72	---	---	---	---	---	---	---	---	28.7	---	---		---	---
Tangi silt loam:[3] (S75LA117-2)	Ap	0-6	---	---	---	---	---	---	---	---	26.1	---	---	---	1.59	1.55
	Bt1	6-19	---	---	---	---	---	---	---	---	26.1	---	---	---	1.69	1.57
	Bt2	19-29	---	---	---	---	---	---	---	---	27.1	---	---	---	1.67	1.58
	2Btx1	29-37	---	---	---	---	---	---	---	---	27.7	---	---	---	1.62	1.53
	2Btx2	37-44	---	---	---	---	---	---	---	---	32.3	---	---	---	1.59	1.47
	2Btx3	44-60	---	---	---	---	---	---	---	---	32.2	---	---	---	1.62	1.51
	2Btx4	60-70	---	---	---	---	---	---	---	---	33.9	---	---	---	1.59	1.52

See footnotes at end of table.

TABLE 18.--PHYSICAL TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.1 mm)	Sand: Very fine (0.1-0.05 mm)	Sand: Total (2.0-0.5 mm)	Silt (0.25-0.002 mm)	Clay (0.002 mm)	Water retained: 1/3 bar	Water retained: 15 bar	WRD	Bulk density: Air-dry	Bulk density: Oven-dry	Bulk density: Field moisture
		In	Pct								Pct (wt)			g/cm^3	g/cm^3	g/cm^3
Tangi silt loam:[1,4] (S75LA117-3)	Ap	0-7	---	---	---	---	---	25.6	61.6	12.8	24.7	---	---	---	1.55	1.52
	Bt1	7-17	---	---	---	---	---	16.3	59.2	24.6	24.2	---	---	---	1.60	1.52
	Bt2	17-26	---	---	---	---	---	25.2	49.8	25.0	22.1	---	---	---	1.62	1.54
	Bt2	26-32	---	---	---	---	---	17.1	54.3	28.6	24.3	---	---	---	1.76	1.70
	2Btx1	32-38	---	---	---	---	---	24.3	40.2	35.5	25.2	---	---	---	1.76	1.68
	2Btx2	38-41	---	---	---	---	---	23.2	34.5	42.2	26.5	---	---	---	1.73	1.65
	2Btx3	41-67	---	---	---	---	---	21.3	35.5	43.2	29.5	---	---	---	1.70	1.60

[1] This is the typical pedon for the series in Washington Parish.

[2] This pedon is on land of the Southeast Louisiana Experiment Station, about 6.2 miles southeast of Franklington, 1 mile southeast of Highway 16, 1,150 feet south of the main station road, 135 feet west of a gravel road, on the east boundary of the station.

[3] This pedon is on land of the Southeast Louisiana Experiment Station, about 6.2 miles southeast of Franklington, 5,000 feet southeast of Highway 16, 45 feet south of the main station road, 750 feet south of the north boundary of the station.

[4] This pedon has a slightly higher content of organic matter in the Ap horizon than is typical for the series. Otherwise, the pedon is similar to the Tangi series.

TABLE 19.--CHEMICAL TEST DATA FOR SELECTED SOILS

(Dashes indicate analyses not made. The symbol < means less than)

Soil name and sample number	Horizon	Depth	Extractable cations: Ca	Extractable cations: Mg	Extractable cations: K	Extractable cations: Na	Extractable acidity	Cation-exchange capacity (NH4OAc)	Base saturation (NH4OAc)	Organic carbon	Nitrogen	Carbon/nitrogen ratio	pH 1:1 H_2O	pH 1:1 KCl	pH 1:2 $CaCl_2$	Extractable iron	Extractable aluminum	Extractable hydrogen	Extractable phosphorus Bray 1	Extractable phosphorus Bray 2
		In	Meq/100g				Pct	Pct		Pct	Pct	Pct				Pct	Meq/100g		Ppm	
Bassfield sandy loam:[1] (S86LA117-2)	Ap	0-5	0.5	0.4	0.2	0.1	5.6	4.9	24.5	0.60	0.057	10.5	5.2	4.3	4.8	0.4	0.2	0.2	23	43
	A	5-11	0.4	0.4	0.2	0.0	4.8	3.3	30.3	0.10	0.025	4.0	5.2	4.1	4.6	0.8	0.6	0.2	<1	<1
	Bt1	11-22	0.6	0.6	0.1	0.0	4.8	5.1	25.5	0.10	0.018	5.6	5.2	4.0	4.5	1.1	0.9	0.3	<1	<1
	Bt2	22-34	0.6	0.6	0.1	0.0	5.4	5.1	25.5	0.10	0.015	6.7	5.1	3.9	4.4	1.1	1.5	0.1	<1	<1
	Bt2	34-41	0.3	0.2	0.1	0.0	3.2	1.9	31.6	0.08	0.006	13.3	5.0	4.0	4.3	0.6	1.1	0.1	<1	<1
	C	41-62	0.2	0.1	0.0	0.0	1.4	0.6	50.0	0.09	0.001	90.0	5.0	4.1	4.4	0.3	0.2	0.2	<1	<1
Ruston fine sandy loam:[1] (S85LA117-1)	Ap	0-6	0.5	0.3	0.1	0.0	8.6	6.1	14.8	1.01	0.067	15.1	5.1	4.0	4.5	0.4	0.9	0.3	<1	4
	E	6-16	0.3	0.5	0.1	0.0	4.7	5.3	17.0	0.12	0.019	6.3	5.0	4.0	4.4	0.7	1.1	0.3	<1	<1
	Bt1	16-26	0.2	1.1	0.1	0.2	6.5	7.2	22.2	0.12	0.018	6.7	5.0	3.8	4.2	1.5	3.0	0.3	<1	<1
	Bt2	26-36	0.1	0.6	0.1	0.0	5.5	5.4	14.8	0.10	0.012	8.3	5.0	3.9	4.3	1.1	2.4	0.3	<1	<1
	B/E	36-44	0.1	0.3	0.1	0.0	4.3	3.1	16.1	0.11	0.003	36.7	5.0	4.0	4.2	0.9	1.4	0.1	<1	<1
	B't	44-65	0.1	0.4	0.1	0.1	5.4	5.1	13.7	0.09	0.005	18.0	5.1	3.9	4.2	1.0	1.5	0.3	<1	<1
Tangi silt loam:[2] (S75LA117-2)	Ap	0-7	4.4	2.1	0.1	0.1		7.2	93.1	2.67	0.092	16.9	6.1	---	5.5	---	0.0	0.2	---	120
	Bt1	7-12	2.9	1.2	0.1	0.1		8.5	---	0.53	0.030	10.0	5.2	---	4.4	---	1.1	0.4	---	1.9
	Bt2	12-24	1.3	1.3	0.1	0.1		9.2	30.4	0.24	0.025	5.6	5.1	---	4.1	---	1.2	0.5	---	1.5
	Bt3	24-32	0.6	1.5	0.1	0.1		7.3	---	0.27	0.023	6.7	4.7	---	4.1	---	2.4	0.4	---	1.5
	Bt4	32-37	0.8	1.3	0.1	0.1		7.3	---	0.21	0.018	6.7	4.8	---	4.2	---	2.1	0.2	---	1.9
	2Btx1	37-47	0.6	1.4	0.1	0.1		7.3	30.1	0.11	0.034	0.5	4.9	---	4.1	---	1.9	0.3	---	1.5
	2Btx2	47-58	0.5	1.6	0.1	0.1		8.4	27.4	0.09	0.011	4.5	4.9	---	4.1	---	2.5	0.2	---	1.3
	2Btx3	58-72	0.6	1.6	0.1	0.1		8.0	30.0	0.09	0.009	5.5	5.2	---	4.3	---	2.1	0.3	---	2.1
Tangi silt loam:[3] (S75LA117-2)	Ap	0-6	4.5	0.6	0.3	0.1	---	8.9	61.8	3.03	0.104	16.8	5.1	---	4.7	---	0.0	0.3	---	210
	Bt1	6-19	3.1	2.1	0.1	0.1	---	9.1	59.3	0.56	0.040	8.0	5.1	---	4.7	---	0.7	0.2	---	3
	Bt2	19-29	1.4	1.0	0.1	0.1	---	6.6	39.4	0.42	0.025	8.8	4.7	---	4.4	---	1.9	0.3	---	2
	2Btx1	29-37	0.8	1.0	0.1	0.1	---	7.5	26.7	0.19	0.019	5.8	4.5	---	4.2	---	2.5	0.4	---	1
	2Btx2	37-44	0.8	1.1	0.1	0.1	---	8.8	23.9	0.23	0.022	5.9	4.7	---	4.2	---	2.8	0.5	---	1
	2Btx3	44-60	0.8	1.3	0.1	0.1	---	9.1	25.3	0.18	0.019	5.3	4.7	---	4.3	---	2.7	0.4	---	1
	2Btx4	60-70	0.8	1.6	0.1	0.1	---	9.3	28.0	0.14	0.014	5.7	4.8	---	4.4	---	2.8	0.4	---	1

See footnotes at end of table.

TABLE 19.--CHEMICAL TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Extractable cations: Ca	Extractable cations: Mg	Extractable cations: K	Extractable cations: Na	Extractable acidity	Cation-exchange capacity (NH4OAc)	Base saturation (NH4OAc)	Organic carbon	Nitrogen	Carbon/nitrogen ratio	pH 1:1 H_2O	pH 1:1 KCl	pH 1:2 $CaCl_2$	Extractable iron	Extractable aluminum	Extractable hydrogen	Extractable phosphorus Bray 1	Extractable phosphorus Bray 2
		In	Meq/100g				Pct	Pct		Pct	Pct	Pct				Pct	Meq/100g		Ppm	
Tangi silt loam:[1,4]																				
(S75LA117-3)	Ap	0-7	4.9	2.2	0.1	0.1	---	11.4	69.3	4.72	0.116	23.6	5.7	4.8	5.1	---	0.0	0.2	---	21
	Bt1	7-17	1.6	1.5	0.1	0.1	---	7.1	46.5	0.60	0.032	10.9	5.1	4.0	4.4	---	1.5	0.4	---	2
	Bt2	17-26	0.4	0.7	0.1	0.1	---	5.7	22.8	0.22	0.013	10.0	4.9	3.9	4.2	---	2.4	0.5	---	2
	Bt2	26-32	0.4	1.0	0.1	0.1	---	6.5	24.6	0.11	0.013	5.4	5.0	3.8	4.1	---	2.3	0.8	---	2
	2Btx1	32-38	0.4	1.1	0.1	0.1	---	8.2	---	0.13	0.013	6.2	5.0	3.9	4.2	---	3.4	0.4	---	2
	2Btx2	38-41	0.4	1.5	0.1	0.2	---	8.8	25.0	0.10	0.009	6.7	5.3	3.8	4.2	---	3.1	0.6	---	2
	2Btx3	41-67	1.0	1.9	0.1	0.2	---	9.7	35.1	0.16	0.010	9.0	4.8	3.6	3.9	---	2.7	0.7	---	2

[1] This is the typical pedon for the series in Washington Parish.

[2] This pedon is on land of the Southeast Louisiana Experiment Station, about 6.2 miles southeast of Franklington, 1 mile southeast of Highway 16, 1,150 feet south of the main station road, 135 feet west of a gravel road, on the east boundary of the station.

[3] This pedon is on land of the Southeast Louisiana Experiment Station, about 6.2 miles southeast of Franklington, 5,000 feet southeast of Highway 16, 45 feet south of the main station road, 750 feet south of the north boundary of the station.

[4] This pedon has a slightly higher content of organic matter in the Ap horizon than is typical for the series. Otherwise, the pedon is similar to the Tangi series.

TABLE 20.--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
*Abita	Fine-silty, siliceous, thermic Glossaquic Paleudalfs
Angie	Clayey, mixed, thermic Aquic Paleudults
*Arat	Fine-silty, siliceous, nonacid, thermic Typic Hydraquents
Arkabutla	Fine-silty, mixed, acid, thermic Aeric Fluvaquents
Bassfield	Coarse-loamy, siliceous, thermic Typic Hapludults
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Cahaba	Fine-loamy, siliceous, thermic Typic Hapludults
*Fluker	Fine-silty, siliceous, thermic Glossaquic Fragiudalfs
Jena	Coarse-loamy, siliceous, thermic Fluventic Dystrochrepts
Latonia	Coarse-loamy, siliceous, thermic Typic Hapludults
Myatt	Fine-loamy, siliceous, thermic Typic Ochraquults
Ouachita	Fine-silty, siliceous, thermic Fluventic Dystrochrepts
Prentiss	Coarse-loamy, siliceous, thermic Glossic Fragiudults
Rosebloom	Fine-silty, mixed, acid, thermic Typic Fluvaquents
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Stough	Coarse-loamy, siliceous, thermic Fragiaquic Paleudults
Tangi	Fine-silty, siliceous, thermic Typic Fragiudults

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