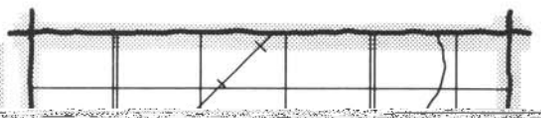
United States Department of Agriculture

Soil Conservation Service

In Cooperation with Mississippi Agricultural and Forestry Experiment Station

Soil Survey of Madison County Mississippi

HOW TO USE



1. Locate your area of interest on the "Index to Map Sheets" (the

Contents

Index to map units

Summary of tables

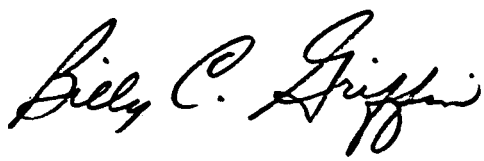
Foreword

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

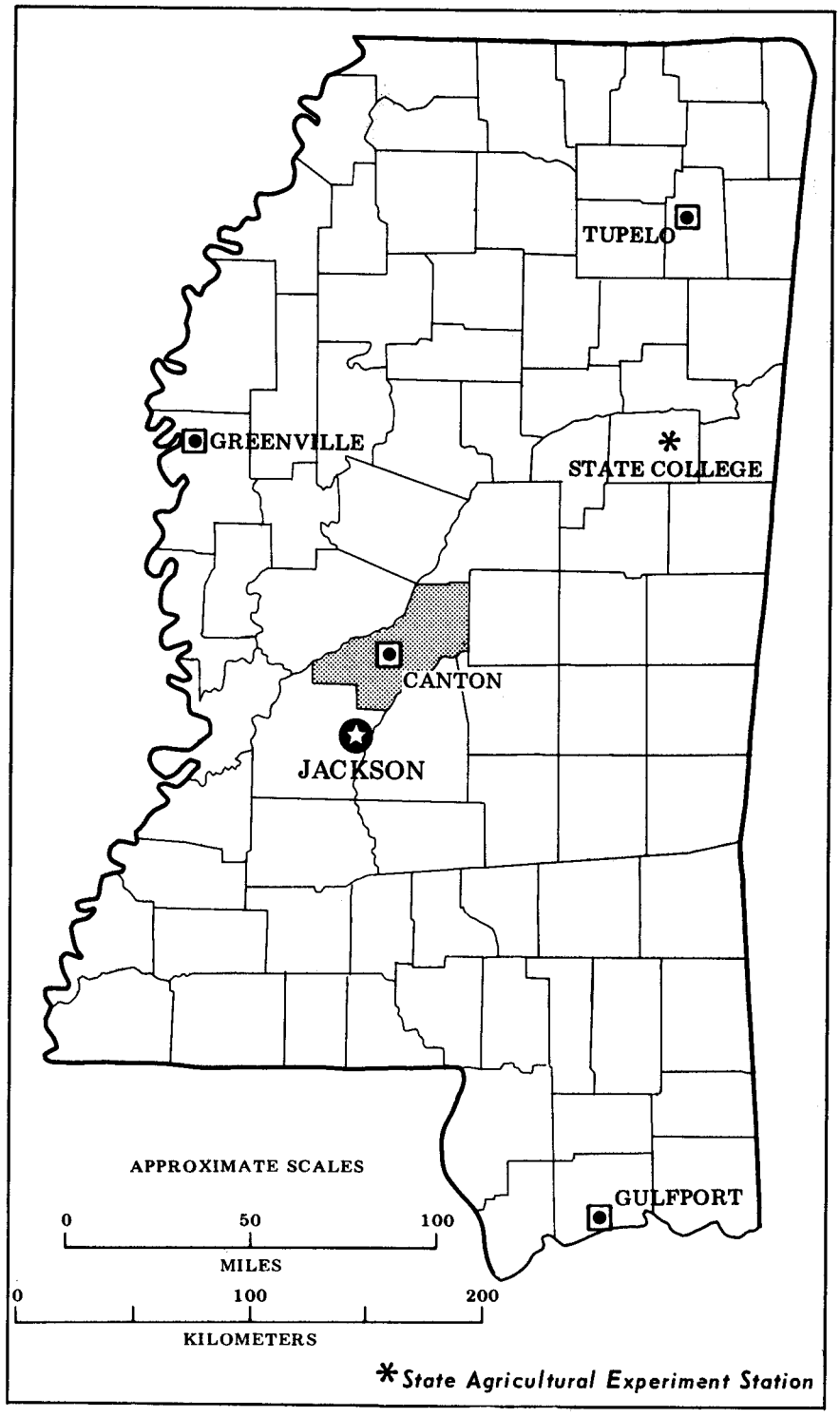
This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.



Billy C. Griffin
State Conservationist
Soil Conservation Service



Location of Madison County in Mississippi.

Soil survey of
Madison County, Mississippi

By Frank T. Scott, Soil Conservation Service

Soils surveyed by Frank T. Scott, Rex E. Davis,
and Lloyd B. Walton, Soil Conservation Service

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

MADISON COUNTY is in the central part of the state. It has an area of about 751 square miles, or 480,640 acres. Canton, the county seat, is near the center of the county. In 1970, the population of the county was 29,737

Description, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent counties. Differences are the result of better knowlege of soils, modification of series concepts,

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temperature is 80°, and the average daily maximum temperature is 92°. The highest recorded temperature, which occurred on August 30, 1951, is 104°.

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

The total annual precipitation is 52 inches. Of this, 26 inches, or 50 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 20 inches. The heaviest 1-day rainfall during the period of record was 5.6 inches at Canton on April 29, 1953. Thunderstorms occur on about 60 days each year, and most occur in summer.

Average seasonal snowfall is 2 inches. The greatest snow depth at any one time during the period of record was 8 inches. Seldom is there at least 1 inch of snow on

purposes. The visual resource is the classifiable appearance of the landscape (*14*).

The visual resource can be described and measured by four elements: landform, water, vegetation, and structures. These elements and their pattern determine the visual diversity of a landscape (*15*). A landscape that has a measurable slope, height, and shape can be compared and rated with other landscapes in the same geographic area. In the "General soil map units" section, each map unit, which is distinctive in that it makes up a landscape, has been rated for visual diversity and the visual contrast that changes in land use have on the landscape.

The visual quality of the landscape is affected by land use, which is influenced by soil characteristics. Visual diversity ratings, therefore, can be used in conservation planning and in establishing a desirable continuity of landscape elements.

The quality of the landscape resource should be considered along with soil capability in planning farmland or urban use. Some tillage methods may create a hazard of erosion and a decline in visual quality. Planting crops

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cattle and calves, 54,865; hogs and pigs, 5,757; and chickens, 3 months or older, 125,782.

Geology

Madison County is crossed from northwest to southeast by three major physiographic belts: the North Central Hills, which are underlain by Cockfield sands and clays, in the northeast; Jackson Prairie, which is on the

The Loess Hills in the northwestern part of the county are high in silt content. They are Pleistocene in age.

The recent silty alluvium is on the Big Black River flood plain and lesser stream valleys throughout the county. The Pearl River flood plain in the southeastern part of the county consists of silty and sandy recent alluvium.

Many individual beds of clays, sands, or silts are exposed along roadbanks and streambanks. Erosion and

General soil map units

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

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

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The eleven general soil map units make up about 97.6 percent of the total acreage in the county. The remaining 2.4 percent is areas of water greater than 40 acres.

Descriptions of the general soil map units follow.

Well drained to poorly drained silty and loamy soils; on flood plains and stream terraces

The soils of the five general soil map units in this

changes will create patterns of moderately low contrast on the landscape.

This map unit makes up about 6 percent of the county. It is about 45 percent Ariel soils, 25 percent Oaklimeter soils, 20 percent Gillsburg soils, and 10 percent minor soils.

The well drained Ariel soils are on broad flood plains near streams. These soils formed in silty alluvium.

The moderately well drained Oaklimeter soils are in intermediate positions on broad flood plains. These soils formed in silty alluvium.

The somewhat poorly drained Gillsburg soils are in slightly lower positions on flood plains. These soils formed in silty alluvium.

The minor soils, all on flood plains, are the moderately well drained Adler and Riedtown soils and the well drained Morganfield soils.

These soils are well suited to crops, pasture, and woodland. Wetness and flooding are the main limitations for farming and most other uses. A good drainage system is needed in places; some drainage systems have been installed.

Flooding and wetness are severe limitations for urban uses.

The potential is good for use of these soils as habitat

use changes will create patterns of moderate contrast on the landscape.

This map unit makes up about 6 percent of the county. It is about 38 percent Oaklimeter soils, 31 percent Ariel soils, 25 percent Gillsburg soils, and 6 percent minor

The minor soils are the moderately well drained Adler soils, well drained Morganfield soils, and the moderately well drained Oaklimeter soils, all on flood plains.

Riedtown and Ariel soils are well suited to crops and pasture. Wetness and occasional flooding are the main

Potential for use of Columbus soils as habitat for openland wildlife is good, but it is fair on Daleville soils. These soils have good potential for use as habitat for woodland wildlife. The potential for use of Daleville soils as habitat for wetland wildlife is good, but it is very poor on Columbus soils.

5. Cascilla-Calhoun

Nearly level, well drained and poorly drained silty soils; on flood plains and stream terraces

The landscape of this unit is characterized by low relief. It has broad, nearly level flood plains and low terraces. This unit includes the narrow sloughs and old channels of the Pearl River. Slopes range from 0 to 2 percent. The soils of this unit are entirely in forest that is underlain with plastic clay that is at a depth between 4 and 6 feet. The somewhat poorly drained silty Calloway soils have a fragipan. The moderately well drained silty Grenada, Loring, and Providence soils have a fragipan. The silty Memphis soils and the loamy Smithdale soils are well drained. Slopes range from 0 to 30 percent. This group makes up about 71.2 percent of the county.

6. Loring-Grenada-Calloway

Nearly level to strongly sloping, moderately well drained and somewhat poorly drained silty soils that have a fragipan; on uplands and stream terraces

The landscape of this unit is characterized by varied relief. It has broad, nearly level and gently sloping ridgetops and sloping to strongly sloping side slopes that

These soils have severe limitations for local roads and streets because of low strength.

where it is poor. The potential as habitat for woodland wildlife is good, and it is very poor for wetland wildlife.

that do not have a fragipan; on upland ridges and side

soils that have a fragipan; the silty, well drained

have a fragipan; on uplands and stream terraces

The landscape of this unit is characterized by prominent relief. It has narrow winding, sloping ridgetops and strongly sloping to steep hillsides. This unit is in the extreme western part of the county. Slopes range from 5 to 40 percent. Many short drainageways are notched into the hillsides. Intermittent creeks flow in winding courses through narrow flood plains. Land use is primarily woodland in which hardwoods are predominant. A few acres on flood plains and on ridgetops are used for pasture or crops. Structures are few. Based on the pattern of these landscape elements, visual diversity is moderate to low. Most land use changes will create patterns of high contrast on the landscape.

This map unit makes up about 3 percent of the county. It is about 65 percent Memphis soils, 25 percent Loring soils, and 10 percent minor soils.

The well drained Memphis soils are on ridges and side slopes of uplands and stream terraces. These soils formed in silty material.

The moderately well drained Loring soils are on ridges and side slopes of uplands and stream terraces. These soils have a fragipan. They formed in silty material.

The minor soils are the moderately well drained Adler and Riedtown soils and the well drained Morganfield soils; all are on flood plains.

Most of the acreage of these soils is in woodland. A small acreage is used for crops or pasture where slopes are favorable. Steep slopes and the severe hazard of erosion are the main limitations to farming and most other uses. Memphis soils are well suited and Loring soils are moderately suited to woodland. Limitations to woodland management are slight.

Memphis soils on sloping ridges have slight to moderate limitations for urban uses but have severe limitations on steep slopes. Loring soils have moderate limitations for urban uses mainly because of wetness. Low strength of Loring soils is a severe limitation to streets and roads.

Potential of these soils for use as habitat for wetland wildlife is very poor. The potential for use as habitat for openland and woodland wildlife is good on Loring and Memphis soils, but the potential for openland wildlife is poor on steep slopes of more than 17 percent.

Detailed soil map units

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

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

Table 4 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.

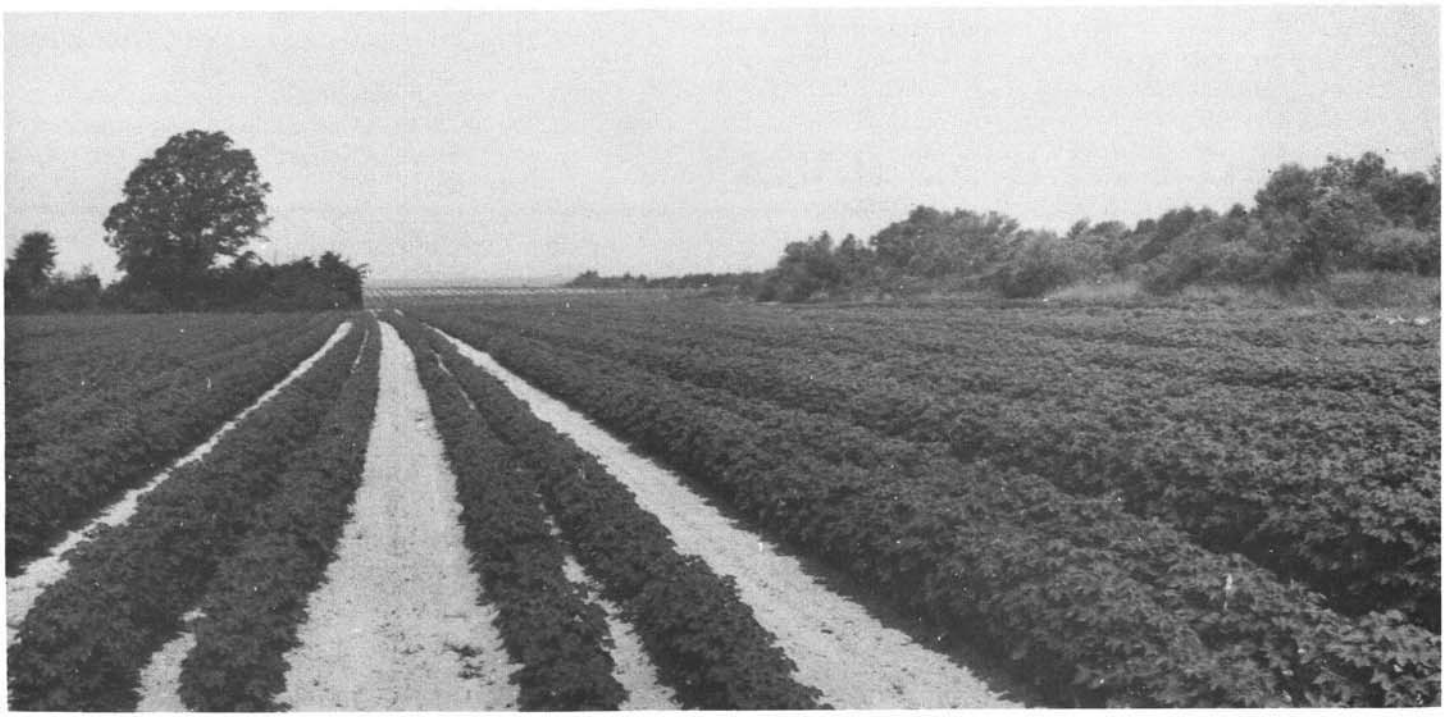


Figure 2.—Skip row cotton on Adler silt loam.

Plant rows should be arranged and surface field ditches constructed to remove excess surface water. Returning crop residue to the soil helps maintain fertility and tilth

periods late in winter and early in spring. Slopes range from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam

Seasonal wetness and flooding are limitations. Flooding seldom occurs during the growing season. Plant rows

amount of water available to plants.

Included in mapping are small areas of Calloway soils in slightly higher positions on terraces or uplands than

and below that, it is gray silt loam mottled in shades of brown.

Ariel soil is very strongly acid or strongly acid throughout except where the surface has been limed. Permeability is moderately slow. Available water capacity is high. Runoff is slow, and erosion is a slight hazard. The high water table is 2 to 3 feet below the surface during winter and early in spring. The rooting zone is deep and easily penetrated by plant roots. The surface layer is easy to keep in good tilth but tends to crust. A plowpan will form if the soil is tilled when wet. Chiseling or subsoiling can break up plowpans.

Other soils included in mapping are small areas of Oaklimeter soils in lower positions on the flood plain. These make up about 5 percent of the map unit.

About half of the acreage in this complex is used for crops and pasture, and the remainder is in woodland. Bruno soil is moderately suited to row crops, small grains, and truck crops; but it is droughty during dry summer months causing plants to undergo moisture stress. Ariel soil is well suited to these crops. However, flooding and seasonal wetness are limitations. Flooding seldom occurs during the growing season. Plant rows should be arranged and surface field ditches constructed

is silt loam mottled in shades of brown and gray; to 36 inches, it is light brownish gray silty clay loam mottled in shades of brown; and the lower part of the fragipan is silt loam mottled in shades of brown, gray, and yellow.

This soil ranges from very strongly acid to medium acid throughout except where the surface has been limed. Permeability is moderate in the upper part of the subsoil and slow in the fragipan. Available water capacity is moderate. Runoff is slow, and erosion is a slight hazard. The water table is perched above the fragipan within 1/2 foot to 1 1/2 feet of the surface in wet seasons. The fragipan restricts plant roots and limits the amount of water available to plants. The surface layer has good tilth and is easily tilled within a wide range of moisture content. The surface has a tendency to crust and pack after hard rains. A plowpan forms if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Providence soils on slightly higher areas of uplands and terraces. Also included are small areas of Daleville soils in depressions of terraces and flood plains.

Most areas of this Bude soil are used for crops or pasture. A small acreage is in woodland. This soil is well

brown and yellowish brown silty clay loam. Below that layer to a depth of 44 inches is a fragipan that is yellowish brown silt loam mottled in shades of gray and brown. Below the fragipan to a depth of about 56 inches is yellowish brown silty clay loam that has gray mottles

clayey material shrinks and swells with changes in moisture content. Proper design and careful installation will help offset these limitations. Wetness and the moderately slow permeability in the fragipan are severe limitations for use of this soil as septic tank absorption

truck crops, and small grains. The hazard of erosion and runoff increase if row crops are grown. Conservation tillage, contour farming, terraces, grassed waterways, and cropping systems that include grasses and legumes

The surface layer and upper part of the subsoil range from very strongly acid to medium acid except where the surface has been limed. The lower part of the subsoil ranges from medium acid to

32 inches, it is a silt loam fragipan that is strong brown mottled in shades of gray and brown; the lower part, to about 50 inches, is a silt loam fragipan that is yellowish brown mottled in shades of gray. The underlying material to a depth of 60 inches is yellowish brown sticky and plastic clay.

In most areas of this severely eroded soil, the original surface layer has been lost through erosion, and the plow layer is subsoil material. In some small areas, the surface layer is a mixture of topsoil and subsoil. Rills and

for use of this soil as septic tank absorption fields. These limitations can be partly overcome by increasing the size of the absorption field.

This Byram soil is in capability subclass VIe and in woodland suitability group 3o7.

Ca—Calhoun silt loam. This is a nearly level, poorly drained soil that formed in silty material. This soil is on broad upland flats, in small depressions on uplands, and on stream terraces. Slopes range from 0 to 1 percent.

limitations are severe, and seedling mortality is moderate; other limitations are slight.

This soil has severe limitations for urban uses. Low strength of the soil for streets and roads and seasonal wetness are the major limitations. The slow permeability

reduce surface compaction. Restricted use during wet periods helps to keep the pasture and soil in good condition.

This soil is well suited to cherrybark oak, loblolly pine,

rows should be arranged on the contour. Conservation

Cascilla soils are very strongly acid or strongly acid

and plant competition. On Calhoun soils, equipment use limitations are severe, and seedling mortality is moderate.

These soils have severe limitations for dwelling sites and urban uses because of frequent flooding and seasonal wetness. Flooding and wetness are severe limitations for use of these soils as septic tank

depth of 65 inches or more. It is sandy clay loam mottled in shades of gray, brown, and red.

Daleville soils are very strongly acid or strongly acid throughout. Permeability is slow. Available water capacity is high. Runoff is very slow, and erosion is a slight hazard. The high water table is within 1/2 to 1 foot of the surface during winter and early in spring. Roots are

part is gray silt loam that has light yellowish brown mottles.

This soil is very strongly acid or strongly acid throughout except where the surface has been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is high. Runoff is slow. Erosion is a slight hazard. From winter through early in spring, the high water table is within 1 foot to 1 1/2 feet of the surface. The root zone is deep and easily penetrated by plant roots. The surface layer is easy to keep in good tilth, but it tends to crust. A plowpan forms if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Oaklimeter soils on flood plains. Also included are some small areas of poorly drained silty soils in depressional areas and soils that have a high content of sodium in the subsoil.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland. This soil is well suited to row crops, truck crops, and small grains. Preparing the seedbed and cultivating are sometimes delayed by seasonal wetness and flooding. Surface field ditches are constructed to remove excess surface water. Returning crop residue to the soil helps maintain fertility and tilth; the residue also reduces crusting and packing, which increases water infiltration.

This soil is well suited to grasses and legumes for hay or pasture. Livestock overgrazing or grazing when the

The surface layer and upper part of the subsoil range from very strongly acid to medium acid except where the surface has been limed. The lower part of the subsoil ranges from strongly acid to neutral. Permeability is moderate in the upper part of the subsoil and slow through the fragipan. Available water capacity is moderate. Runoff is slow, and erosion is a slight hazard. A high water table is perched above the fragipan within l 1/2 to 2 1/2 feet of the surface in wet seasons. The fragipan restricts the roots and limits the amount of water available to plants. The surface layer has good tilth and is easily tilled within a wide range of moisture content. The surface tends to crust and pack after hard rains. A plowpan forms easily if this soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Calloway soils in lower terrace positions and Loring soils in slightly higher positions.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland. This soil is well suited to row crops, truck crops, and small grains. Plant row arrangement, grassed waterways, and surface field ditches help remove excess surface water. Returning crop residue to the soil helps maintain fertility and tilth and reduces crusting and packing.

This soil is well suited to pasture or hay. Livestock overgrazing or grazing when the soil is too wet will cause surface compaction, excessive runoff, and poor tilth. Proper stocking, pasture rotations, deferred grazing, and

is a silt loam fragipan mottled in shades of gray and brown.

In most areas of this eroded soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil and subsoil. In small areas, all of the plow layer is the original topsoil, and in other areas, the plow layer is mainly subsoil material. Some areas of this soil have a few rills and shallow gullies.

The surface layer and upper part of the subsoil range from very strongly acid to medium acid except where the surface has been limed. The lower part of the subsoil ranges from strongly acid to neutral. Permeability is moderate in the upper part of the subsoil and slow through the fragipan. Available water capacity is

LoA—Loring silt loam, 0 to 2 percent slopes. This is nearly level, moderately well drained soil that has a fragipan. This soil formed in silty material on terraces and broad ridgetops on uplands.

Typically, the surface layer is yellowish brown silt loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part to a depth of about 23 inches is dark brown silt loam; to a depth of about 27 inches, it is yellowish brown silt loam. To a depth of 37 inches, it is a silt loam fragipan mottled in shades of brown and gray. The lower part of the fragipan is yellowish brown silt loam mottled in shades of brown and gray.

The surface layer and upper part of the subsoil range from very strongly acid to medium acid except where the

This Loring soil is in capability class IIw and in woodland suitability group 3o7.

LoB2—Loring silt loam, 2 to 5 percent slopes, eroded. This is a gently sloping, moderately well drained soil that has a fragipan. This soil formed in silty material on broad ridgetops on uplands.

Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil extends to a depth of about 52 inches or more. The upper part to a depth of about 30 inches is dark brown silt loam. The lower part of the subsoil is a silt loam fragipan that is dark brown mottled in shades of gray and brown. The underlying material to 70 inches is dark brown silt loam mottled in shades of gray and brown.

In most areas of this eroded soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil and subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas, the plow layer is mainly subsoil material. Some areas of this soil have a few rills and shallow gullies.

The surface layer and the subsoil range from very strongly acid to medium acid except where the surface has been limed. The underlying material ranges from very strongly acid to slightly acid. Permeability is moderate in the upper part of the subsoil and moderately slow through the fragipan. Available water capacity is moderate. Runoff is medium, and erosion is a moderate hazard. A high water table is perched above the fragipan within 2 to 3 feet of the surface in wet seasons. The fragipan restricts the roots and limits the amount of water available to plants. The surface layer has good tilth and is easily tilled within a wide range of moisture content. The surface tends to crust and pack after hard rains. A plowpan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Grenada, Memphis, and Providence soils, which are intermingled on uplands and terraces.

Most areas of the soil are used for crops or pasture. A small acreage is in woodland. This soil is well suited to row crops, truck crops, and small grains (fig. 3). Conservation tillage, contour farming, terraces, and grassed waterways slow runoff and help control erosion. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting and packing.

This soil is well suited to pasture or hay. The plants help slow runoff and control erosion. Livestock overgrazing or grazing when the soil is too wet will cause surface compaction, excessive runoff, and poor tilth. Proper stocking, pasture rotation, deferred grazing, and weed and brush control help to keep the pasture and soil in good condition.

Included in mapping are small areas of Providence and Memphis soils on uplands. Also included are a few small areas of soils that are severely eroded.

Most areas of this Loring soil are used for pasture or crops. The remaining acreage is in woodland. This soil is moderately suited to row crops, truck crops, and small grains (fig. 4). The erosion hazard and runoff are

LoD2—Loring silt loam, 8 to 12 percent slopes, eroded. This is a strongly sloping, moderately well drained soil that has a fragipan. This soil formed in silty material on ridgetops and side slopes on uplands.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The subsoil extends to a depth of about 70 inches. To a depth of about 32 inches, it is yellowish brown and dark brown silt loam. Below that layer is a silt loam fragipan that is dark yellowish brown mottled in shades of gray that grade to yellowish brown as depth increases.

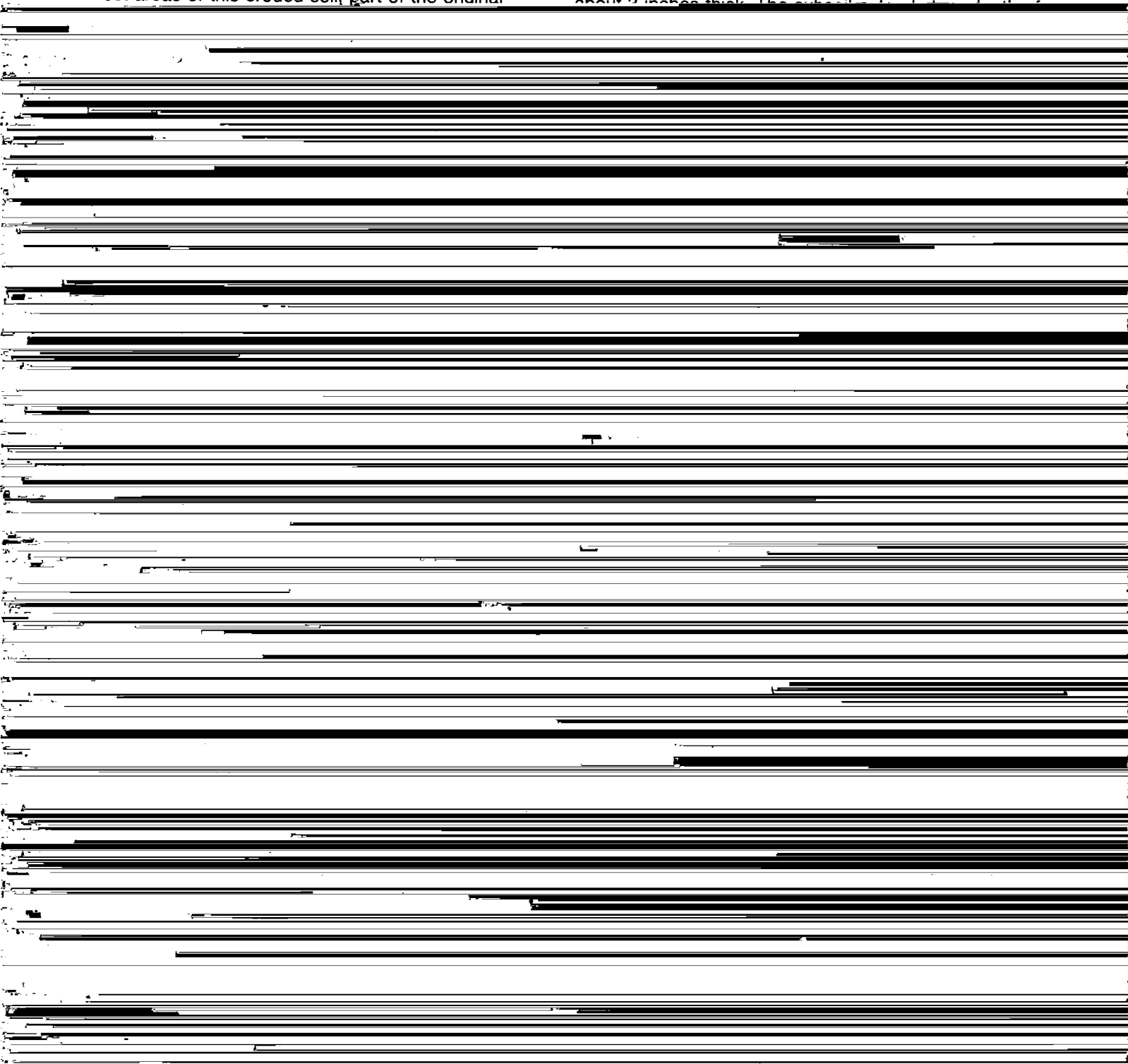
In most areas of this eroded soil, part of the original

fragipan and wetness are severe limitations for use of this soil as septic tank absorption fields. These limitations can be partly overcome by increasing the size of the absorption field.

This Loring soil is in capability subclass IVe and in woodland suitability group 3o7.

LoD3—Loring silt loam, 8 to 12 percent slopes, severely eroded. This is a strongly sloping, moderately well drained soil that has a fragipan. This soil formed in silty material on ridgetops and side slopes on uplands.

Typically, the surface layer is dark brown silt loam



yellow poplar, southern red oak, sweetgum, and water chernybark oak, water oak, willow oak, green ash

Typically, the surface layer is dark brown silt loam about 6 inches thick. The subsoil extends to a depth of about 65 inches. To a depth of about 26 inches, it is dark brown silty clay loam; below that layer, it is dark brown silt loam.

In most areas of this eroded soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil and subsoil. In some small areas, all of the plow layer is the original topsoil, and in other areas, the plow layer is mainly subsoil material. Some areas of this soil have a few rills and shallow gullies.

This soil ranges from very strongly acid to medium acid throughout except where the surface has been limed. Permeability is moderate. Available water capacity is high. Runoff is slow to medium, and erosion is a moderate hazard. The high water table is more than 6 feet below the surface. The rooting zone is deep and easily penetrated by plant roots. The surface layer has good tilth and is easily tilled within a wide range of moisture conditions. The surface tends to crust and pack after hard rains. A plowpan forms if this soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Grenada and Loring soils on uplands and terraces. Also, included are small severely eroded areas that have a surface texture of silty clay loam.

Almost all areas of this soil are used for crops or pasture. The remainder is in woodland. This soil is well suited to row crops, truck crops, and small grains. Conservation tillage, contour farming, terraces, grassed

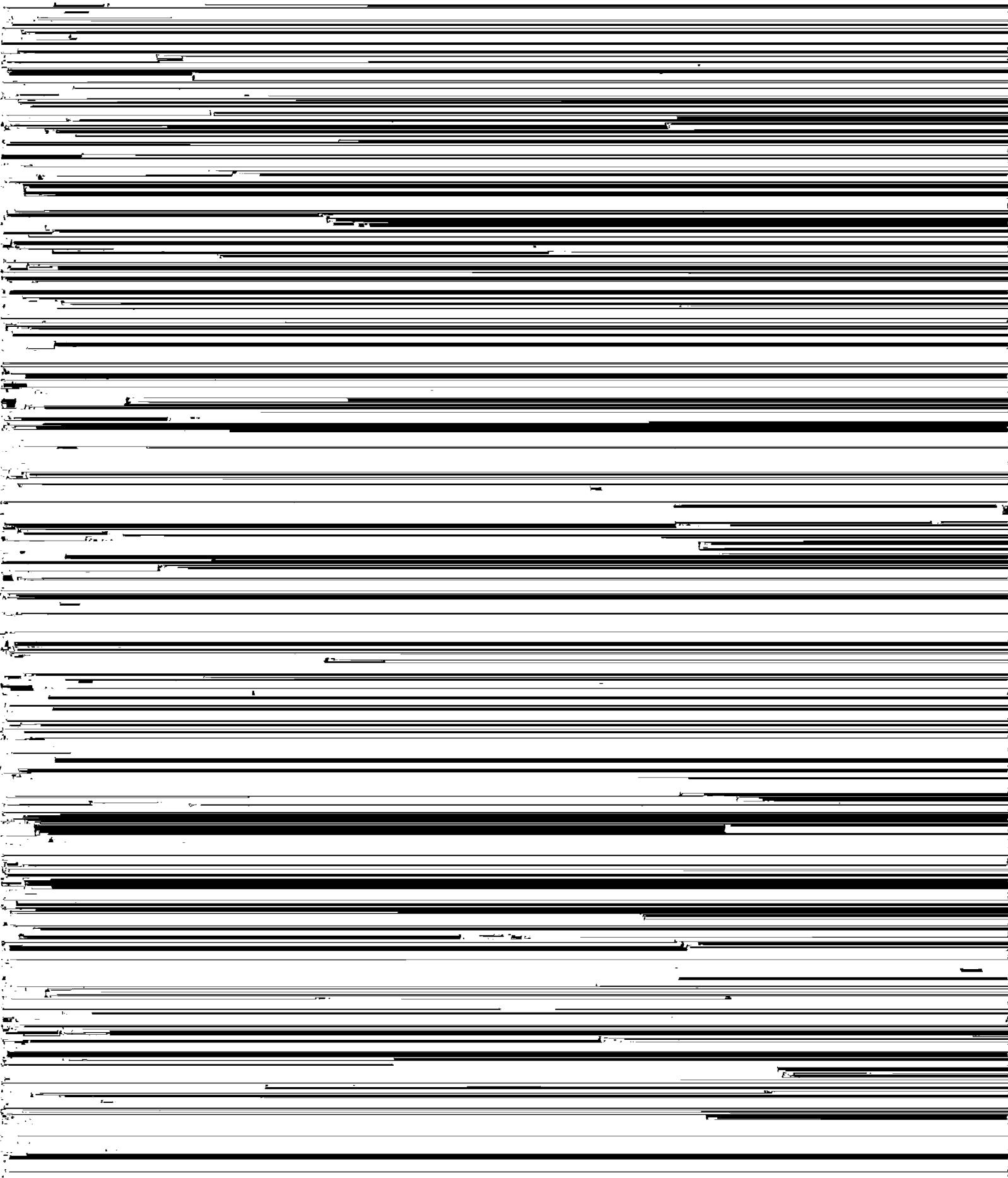
dark brown silty clay loam; to about 40 inches, it is dark brown silt loam; and below that layer, it is dark yellowish brown silt loam.

In most areas of this eroded soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil and subsoil. In some small areas, all of the plow layer is the original topsoil, and in other areas, the plow layer is mainly subsoil material. Some areas of this soil have a few rills and shallow gullies.

This soil ranges from very strongly acid to medium acid throughout except where the surface has been limed. Permeability is moderate. Available water capacity is high. Runoff is medium, and erosion is a moderate hazard. The high water table is more than 6 feet below the surface. The rooting zone is deep and easily penetrated by plant roots. The surface layer has good tilth and is easily tilled within a wide range of moisture conditions. The surface tends to crust and pack after hard rains. A plowpan forms if this soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Loring soils on uplands. Also, included are small areas of severely eroded Memphis soils on uplands.

Most areas of this soil are used for pasture or crops. The remainder is in woodland. This soil is moderately suited to row crops, truck crops, and small grains. The erosion hazard and runoff are increased if row crops are grown. Conservation tillage, contour farming, terraces, grassed waterways, and cropping systems that include grasses and legumes help slow runoff and control erosion. Returning crop residue to the soil helps maintain



loam about 2 inches thick. The subsurface layer to a depth of about 6 inches is brown silt loam. The subsoil extends to a depth of about 60 inches. To a depth of about 30 inches, it is dark brown silt loam; below that layer, it is dark yellowish brown silt loam.

In most areas of this severely eroded soil, the original

The reaction of Memphis soils ranges from very strongly acid to medium acid throughout. Permeability is moderate. Available water capacity is high. Runoff is rapid, and erosion is a severe hazard. The high water table is more than 6 feet below the surface. The root zone is deep and easily penetrated by plant roots.

capacity is high. Runoff is slow, and erosion is a slight hazard. The high water table is within 3 to 4 feet of the surface in winter and early in spring. The root zone is deep and easily penetrated by plant roots. The surface layer is easy to keep in good tilth, but the surface tends to crust after hard rains. A plowpan will form if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Adler soils in slightly lower positions on the flood plain and Riedtown soils in positions similar to those of this Morganfield soil.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland. This soil is well suited to row crops, small grains, and truck crops. Flooding, wetness, and slow runoff in wet seasons are limitations. Flooding rarely causes damage to crops during the growing season. Plant rows should be arranged and surface field ditches constructed to remove the excess surface water. Returning crop residue to the soil helps maintain fertility and tilth and reduces crusting. Preparing the seedbed and cultivating in the spring are sometimes slightly delayed because of excess moisture.

This soil is well suited to grasses and legumes for pasture or hay. Livestock overgrazing or grazing when the soil is too wet will cause surface compaction, slow infiltration, and poor tilth. Proper stocking, pasture rotation, and weed and brush control help to maintain the pasture and soil in good condition.

This soil is well suited to green ash, eastern cottonwood, yellow-poplar, sweetgum, Nuttall oak, water oak, and American sycamore. Plant competition is a

crust. A plowpan forms if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in the mapping are small areas of well drained Ariel soils in higher positions and Gillsburg soils in lower positions. Also included are a few small areas of a moderately well drained silty soil in positions similar to those of this Oaklimeter soil.

Most areas of this Oaklimeter soil are used for crops or pasture. A small acreage is in woodland. It is well suited to row crops, truck crops, and small grains (fig. 6). Flooding and seasonal wetness are limitations. Flooding rarely causes damage to crops during the growing season. Plant rows should be arranged and surface field ditches constructed to remove excess surface water. Returning crop residue to the soil helps maintain fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay or pasture. Livestock overgrazing or grazing when the soil is too wet will cause poor tilth and surface compaction. Proper stocking, controlled grazing, and weed and brush control help keep the soil in good tilth and reduce compaction.

This soil is well suited to cherrybark oak, eastern cottonwood, green ash, loblolly pine, Nuttall oak, willow oak, water oak, sweetgum, and yellow-poplar. Plant competition is a moderate limitation; other limitations are slight.

This soil has severe limitations for all urban uses because of wetness and occasional flooding. Flooding and wetness are severe limitations for use of this soil as septic tank absorption fields.

About 8 percent of this unit consists of minor soils. They include small areas of somewhat poorly drained silty soils on the flood plains and small areas of Calhoun soils in depressions and drainageways of stream terraces.

Most areas of the soils in this association are used as woodland (fig. 7). Some areas, which are less likely to be flooded, are use[illegible]

mortality and plant competition are moderate limitations on Oaklimeter, Ariel, and Gillsburg soils.

These soils have severe limitations for all urban uses because of frequent flooding and seasonal wetness. Flooding and wetness are severe limitations for use of these soils as septic tank absorption fields.

These soils are in capability subclass Vw. Oaklimeter and Ariel soils are in woodland suitability group 1w8, and

Udorthents consists mainly of overburden that was removed from the surface as the pit was dug or of accumulations of sediment that eroded from bare pit walls and floors. The soil material supports low quality grass and trees.

In this complex, most of this vegetation has little economic value and is useful only for erosion control. Many acres are not protected from erosion. Pits are generally poorly suited to crops, pasture, or woodland.

Pits and Udorthents in this complex are not assigned to a capability subclass or to a woodland suitability group.

PoA—Providence silt loam, 0 to 2 percent slopes. This is a nearly level, moderately well drained soil that has a fragipan. This soil formed in a mantle of silty material overlying loamy material. It is on broad flats in uplands and stream terraces.

Typically, the surface layer is yellowish brown silt loam about 5 inches thick. The subsoil is silt loam and extends to a depth of about 60 inches. To about 9 inches, it is brown; to a depth of about 15 inches, it is strong brown; and to about 22 inches, it is yellowish brown. Below that layer, it is a yellowish brown fragipan mottled in shades of gray and brown.

This soil ranges from very strongly acid to medium acid throughout except where the surface has been limed. Permeability is moderate in the upper parts of the

This soil is moderately suited to loblolly pine, shortleaf pine, Shumard oak, yellow-poplar, and sweetgum. Limitations are slight.

This soil has moderate limitations for most urban uses. The low strength of this soil is a severe limitation for streets and roads. Limitations for urban uses include seasonal wetness and the shrink-swell properties of the subsoil. Proper design and careful installation will help offset these limitations. The moderately slow permeability in the fragipan and wetness are severe limitations for use of this soil as septic tank absorption fields. These limitations can be partly overcome by increasing the size of the absorption field.

This Providence soil is in capability subclass IIw and in woodland suitability group 3o7.

PoB2—Providence silt loam, 2 to 5 percent slopes, eroded. This is a gently sloping, moderately well drained soil that has a fragipan. This soil formed in a mantle of silty material overlying loamy material on broad uplands.

Typically, the surface layer is dark brown silt loam about 6 inches thick. The subsoil extends to a depth of about 70 inches or more. To a depth of about 14 inches, it is dark brown silt loam; to about 22 inches, it is strong brown silt loam. Below that layer to a depth of about 52 inches, it is a fragipan. The upper part of the fragipan to 28 inches is yellowish brown silt loam that has gray mottles; to 36 inches, it is silt loam mottled in shades of

Most areas of this Providence soil are used for crops and pasture; a small acreage is in woodland. This soil is well suited to row crops, truck crops, and small grains. Conservation tillage, contour farming, terraces, and grassed waterways help slow runoff and control erosion

is perched above the fragipan within 1 1/2 to 3 feet of the surface in wet seasons. The fragipan restricts roots and limits the amount of water available to plants. The surface layer has good tilth, is friable, and is easily tilled within a wide range in moisture content. The surface

Included in mapping are small areas of Smithdale soils on steep upland side slopes of the uplands. These soils make up about 15 percent of the complex.

Most of the soils in this complex are used for pasture or as woodland. A small acreage is used for crops. These soils are poorly suited to row crops, truck crops, and small grains because of the steep slopes, rapid runoff, and erosion hazard. The soils are better suited to a permanent vegetative cover of grasses and legumes or trees because of the erosion hazard.

The soils in this complex are moderately suited to grasses and legumes for hay or pasture. The plant cover helps control erosion. Smoothing and shaping of gullies are needed in a few places. Proper stocking, controlled grazing, and weed and brush control help to control erosion, slow runoff, and reduce surface compaction.

The soils in this complex are moderately suited to Shumard oak, sweetgum, cherrybark oak, loblolly pine, shortleaf pine, yellow-poplar, and southern red oak. Plant competition is a moderate limitation on the Lexington soil; other limitations are slight.

These soils have moderate limitations for most urban uses. The low strength of these soils is a severe limitation for streets and roads. The steepness of slopes is a moderate limitation for some urban uses, but it is severe for small commercial buildings. The moderately slow permeability of the fragipan and wetness are severe limitations for use of Providence soil as septic tank absorption fields. These limitations can be partly overcome by increasing the size of the absorption field. The steepness of slopes is a moderate limitation for use of Lexington soil as septic tank absorption fields. This limitation can be partly overcome by installing field lines on the contour.

These soils are in capability subclass IVe and in woodland suitability group 3o7.

PrD3—Providence-Lexington complex, 8 to 12 percent slopes, severely eroded. This map unit consists of small areas of strongly sloping Providence and Lexington soils on uplands. These soils are so intermingled that mapping them separately was not practical. The moderately well drained Providence soil has a fragipan. This soil formed in a mantle of silty material overlying loamy material on ridgetops and upper side slopes. The well drained Lexington soil formed in a mantle of silty material overlying loamy material on middle and lower side slopes. Areas of these soils range from 15 to 120 acres.

Providence soil makes up about 60 percent of the map unit. Typically, the surface layer is dark brown silt loam about 3 inches thick. The subsoil extends to a depth of about 65 inches. To a depth of about 23 inches, it is a dark brown silty clay loam. Below that layer is a silt loam fragipan that grades to loam as depth increases. The fragipan is yellowish brown mottled in shades of

Providence soil ranges from very strongly acid to medium acid throughout except where the surface layer has been limed. Permeability is moderate in the upper part of the subsoil and moderately slow through the fragipan. Available water capacity is moderate. Runoff is rapid, and erosion is a severe hazard. A high water table is perched above the fragipan within 1 1/2 to 3 feet of the surface in wet seasons. The fragipan restricts roots and limits the water available to plants.

Lexington soil makes up about 25 percent of the map unit. Typically, the surface layer is dark grayish brown silt loam about 1 inch thick. The subsurface layer to a depth of about 3 inches is brown silt loam. The subsoil extends to a depth of about 65 inches. The upper part to a depth of about 23 inches is dark brown silty clay loam; to a depth of about 30 inches, it is strong brown loam mottled in shades of brown and gray; and the lower part is yellowish brown sandy loam mottled in shades of brown.

Lexington soil ranges from very strongly acid to medium acid throughout except where the surface layer has been limed. Permeability is moderate. Available water capacity is moderate. Runoff is rapid, and erosion is a severe hazard. The high water table is more than 6 feet below the surface. The root zone is deep and easily penetrated by plant roots.

In most areas of these severely eroded soils, the original surface layer has been lost through erosion, and the plow layer is subsoil material. In some small areas, the surface layer is a mixture of original topsoil and subsoil. Rills and shallow gullies are common. In a few areas of these soils, a few deep gullies that are not crossable with farm machinery have formed.

Included in mapping are small areas of Smithdale soils on side slopes of the uplands. These soils make up about 15 percent of the complex.

Most of the soils in this complex are used for pasture or as woodland. These soils are poorly suited to row crops, truck crops, and small grains because of the erosion hazard and the steep slopes. If cultivated crops are grown, further losses by erosion are possible. The soils are better suited to a permanent vegetative cover of grasses and legumes or trees because of the erosion hazard.

These soils are moderately suited to grasses and legumes for hay or pasture. The plant cover helps control erosion. Smoothing and shaping of gullies help make mowing and other production practices easier. Overgrazing by livestock causes excessive runoff and increases the erosion hazard. Proper stocking, controlled grazing, and weed and brush control help slow runoff and reduce the erosion hazard.

These soils are moderately suited to Shumard oak, cherrybark oak, loblolly pine, shortleaf pine, yellow-poplar, sweetgum, and southern red oak. Plant competition is a moderate limitation on the Lexington

These soils have moderate limitations for most urban uses. The low strength of the soil for streets and roads and the steep slopes are the main limitations. Proper design and careful installation will help overcome these limitations. The Providence soil has severe limitations

capacity is low. Runoff is very rapid. Erosion is a very severe hazard.

Included in mapping are small areas of Smithdale soils on steep side slopes and Loring soils on narrow ridgetops of uplands. These soils make up about 20

root zone is deep and easily penetrated by plant roots. The surface layer is easy to keep in good tilth, but it tends to crust after hard rains. A plowpan forms if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Adler, McRaven, and Oaklimeter soils on flood plains.

Most areas of this soil are used for crops or pasture except for a small acreage that is in woodland. This soil is well suited to row crops, truck crops, and small grains. Seasonal wetness and flooding are limitations. Row arrangement and surface field ditches are needed to remove excess surface water. Returning crop residue to the soil helps maintain fertility and tilth and reduces crusting and packing. Preparing the seedbed and cultivating are sometimes delayed in the spring because of wetness.

This soil is well suited to grasses and legumes for hay or pasture. Livestock overgrazing or grazing when the soil is too wet will cause surface compaction and poor tilth. Proper stocking, controlled grazing, and weed and brush control will help to improve tilth and reduce compaction.

This soil is well suited to eastern cottonwood, green ash, sweetgum, American sycamore, water oak, willow oak, and yellow-poplar. Plant competition is a moderate limitation; other limitations are slight.

This soil has severe limitations for urban uses because of flooding and wetness. Flooding and wetness also are severe limitations for use of this soil as septic tank absorption fields.

This Riedtown soil is in capability subclass IIw and in woodland suitability group 1o4.

SeB2—Siwell silt loam, 2 to 5 percent slopes, eroded. This is a gently sloping, moderately well drained soil that formed in a mantle of silty material and underlying alkaline clays. This soil is on ridgetops on

of the subsoil ranges from slightly acid to moderately alkaline, and the underlying clayey material ranges from neutral to moderately alkaline. Permeability is moderate in the upper part of the subsoil and very slow in the lower part. Available water capacity is high. Runoff is medium, and erosion is a moderate hazard. The high water table is perched within 2 1/2 to 3 feet of the surface in winter and early in spring. The very slow permeability of the clayey underlying material restricts roots. This soil is easy to keep in good tilth, but the surface tends to crust and pack after hard rains. A plowpan forms if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Byram and Providence soils on uplands. Also included are small areas of soils that are severely eroded.

Most areas of this Siwell soil are used for pasture or crops; some small acreages are in woodland. This soil is well suited to cultivated crops, truck crops, and small grains. The erosion hazard and runoff are increased if cultivated crops are grown. Conservation tillage, contour farming, terraces, grassed waterways, and cropping systems that include grasses and legumes help slow runoff and control erosion. Returning crop residue to the soil helps maintain fertility and increases water infiltration.

This soil is moderately suited to grasses and legumes for hay or pasture. Proper stocking, controlled grazing, and weed and brush control slow runoff, prevent erosion, and reduce surface compaction. Restricted use during wet periods helps to keep the pasture and soil in good condition.

This soil is moderately suited to cherrybark oak, loblolly pine, sweetgum, Shumard oak, white oak, and yellow-poplar. Limitations are slight.

This soil has severe limitations for urban uses. The low strength of this soil for local streets and roads and the high shrink-swell properties are severe limitations. Proper

about 38 inches is light olive brown silty clay mottled in shades of brown and gray. The underlying material to 70 inches is light yellowish brown clay that has grayish mottles below about 54 inches.

In most areas of this severely eroded soil, the original surface layer has been lost through erosion, and the plow layer is subsoil material. In some small areas, the

The Siwell soil is in capability subclass VIe and in woodland suitability group 3o7.

SpD2—Smithdale-Providence complex, 8 to 12 percent slopes, eroded. This complex consists of small areas of strongly sloping Smithdale and Providence soils on uplands that are so intermingled that mapping them

Most soils in this complex are used for pasture or as woodland. A small acreage is used for crops. These soils

For small commercial buildings, the steepness of slope is a severe limitation. For local roads and streets, the

consists of small areas of strongly sloping Smithdale and Providence soils that are so intermingled that mapping them separately was not practical. The well drained Smithdale soil formed in loamy material on side slopes. The moderately well drained Providence soil that has a fragipan formed in a mantle of silty material and underlying loamy material. The Providence soil is on ridgetops and upper side slopes. Areas range from 30 to 140 acres.

Smithdale soil makes up about 52 percent of the map unit. Typically, the surface layer is brown fine sandy loam about 3 inches thick. The subsoil extends to a depth of 70 inches or more. The upper part to a depth of about 23 inches is yellowish red sandy clay loam; to a depth of about 42 inches, it is red loam; and the lower part is red sandy loam.

Smithdale soil is very strongly acid or strongly acid throughout. Permeability is moderate. Available water capacity is high. Runoff is rapid, and erosion is a severe hazard. The high water table is more than 6 feet below the surface. The root zone is deep and easily penetrated by plant roots.

Providence soil makes up about 38 percent of the map

Soils in this complex are moderately suited to grasses and legumes for hay or pasture. Smoothing and shaping of gullies are needed in a few places. Proper stocking, controlled grazing, and weed and brush control will help to control erosion, slow runoff, and reduce surface compaction.

Soils in this complex are moderately suited to Shumard oak, loblolly pine, longleaf pine, shortleaf pine, slash pine, and sweetgum. Plant competition on Smithdale soils is a moderate limitation; other limitations are slight.

Soils in this complex have moderate limitations for urban uses. Steepness of slopes is the main limitation, but this can be overcome by proper design and careful installation. For small commercial buildings, steepness of slopes is a severe limitation. For local roads and streets, the limitations on Providence soils are severe. The steepness of slopes is a moderate limitation for use of Smithdale soil as septic tank absorption fields. This can be partly overcome by installing field lines on the contour. Wetness and the moderately slow permeability in the fragipan are severe limitations for use of Providence soil as septic tank absorption fields.

loam about 5 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part to a depth of about 22 inches is strong brown silty clay loam. The lower part to a depth of 60 inches is a fragipan that is yellowish red sandy clay loam that has grayish mottles. Below about 27 inches, the fragipan grades to yellowish red loam that has mottles in shades of brown and gray.

Providence soil ranges from very strongly acid to medium acid throughout. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. Runoff is rapid, and erosion is a severe hazard. The high water table is perched above the fragipan within 1 1/2 to 3 feet of the surface in wet seasons. The fragipan restricts roots and the water available to plants.

In most areas, part of the original surface layer has been removed by erosion, and tillage has mixed the topsoil and subsoil. In places, all of the plow layer is the original topsoil, and in other places, the plow layer is subsoil material. Some areas of these soils have a few rills and shallow gullies.

Included in mapping are some small areas of Lexington and Tippah soils on uplands. Also included are small, severely eroded areas of soils. These soils make up about 12 percent of the complex.

Most areas of soils in this complex are used as woodland. A small acreage is used for pasture. Soils in this complex are poorly suited to row crops, truck crops, and small grains because of the steepness of slope and

The soils in this complex are in capability subclass VIe. Smithdale soil is in woodland suitability group 3o1, and Providence soil is in woodland suitability group 3o7.

SR—Smithdale-Providence association, hilly. This map unit consists of well drained and moderately well drained soils. The landscape is one of narrow winding ridgetops, segregated by moderately steep to steep hillsides that border narrow drainageways. The Smithdale soils formed in loamy material on side slopes. The Providence soils, which have a fragipan, formed in a mantle of silty material and underlying loamy material. These soils are in a regular and repeating pattern on the landscape. Individual areas of each soil are large enough to map separately, but because of similar present and expected uses, they were mapped as one unit. Areas range from 160 to 4,000 acres. Slopes range from 12 to 30 percent.

The well drained Smithdale soils make up about 52 percent of the map unit. Slopes range from 12 to 30 percent. Typically, the surface layer is very dark grayish brown and light yellowish brown sandy loam about 1 inch thick. The subsurface layer to a depth of about 9 inches is yellowish brown sandy loam. The subsoil extends to a depth of about 80 inches or more. To a depth of about 12 inches, it is strong brown sandy loam; to a depth of about 28 inches, it is red sandy clay loam that has a few pockets of uncoated sand grains; and to 80 inches, it is red sandy loam that has pockets of uncoated sand

on narrow ridgetops, and small areas of Oaklimeter soils in narrow drainageways. These soils make up about 20 percent of the association.

Most areas of soils in this association are used as woodland. These soils are poorly suited to pasture, truck crops, small grains, or row crops because of steep slopes, rapid runoff, and the severe erosion hazard. These soils should be kept in a permanent vegetative cover of grasses and legumes or trees.

These soils are moderately suited to loblolly pine, longleaf pine, shortleaf pine, slash pine, Shumard oak, and sweetgum. Plant competition on Smithdale soils is a moderate limitation; other limitations are slight.

These soils have severe limitations for urban uses because of the steep slopes. However, in some small areas of gently sloping to sloping soils, limitations are moderate for urban uses. The steepness of slopes is a severe limitation for use of Smithdale soil as septic tank absorption fields. This limitation can be partly overcome by installing lines on the contour. Wetness and the moderately slow permeability in the fragipan are severe limitations for use of Providence soil as septic tank absorption fields. Increasing the size of the absorption field can partly overcome these limitations.

The Smithdale soils are in capability subclass VIIe and in woodland suitability group 3o1. The Providence soils

2 to 2 1/2 feet of the surface in winter and spring. The root zone is deep and easily penetrated by plant roots. The surface layer has good tilth and is easily tilled within a wide range of moisture content. The surface tends to crust and pack after hard rains. A plowpan forms if this soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Providence soils on uplands. Also included are a few small areas of soils that have slopes greater than 5 percent.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland. This soil is well suited to row crops, truck crops, and small grains. If row crops are grown, conservation tillage, contour farming, grassed waterways, and terraces may be needed to control erosion. Returning crop residue to the soil helps maintain fertility and tilth and reduces crusting and packing.

This soil is well suited to grasses and legumes for hay or pasture. The vegetative cover helps control erosion. Livestock overgrazing or grazing when the soil is too wet will cause surface compaction, excessive runoff, and poor tilth. Proper stocking, controlled grazing, and weed and brush control help slow runoff, maintain good tilth, and reduce compaction.

This soil is moderately suited to cherrybark oak, loblolly pine, Shumard oak, sweetgum, white oak, and

the plow layer is mainly subsoil material. Some areas of this soil have a few rills and shallow gullies.

This soil ranges from very strongly acid to medium acid throughout except where the surface has been limed. Permeability is moderate in the upper part of the subsoil and is slow in the lower part. Available water capacity is high. Runoff is medium, and erosion is a moderate hazard. The high water table is perched within 2 to 2 1/2 feet of the surface in winter and spring. The root zone is deep and easily penetrated by plant roots. This soil can be tilled within a wide range of moisture content, but the surface tends to crust and pack after hard rains. A plowpan forms if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan.

Included in mapping are small areas of Providence soils on uplands. Also a few small areas of severely eroded Tippah soils are included.

Most areas of this soil are used for pasture or as woodland. A small acreage is used for crops. This soil is moderately suited to row crops, truck crops, and small grains. Cultivation increases runoff and the hazard of erosion. If row crops are grown, cropping systems that include grasses and legumes, conservation tillage, contour farming, grassed waterways, and terraces help control erosion. Returning crop residue to the soil helps maintain fertility and tilth and reduces crusting and packing.

This soil is well suited to grasses and legumes for hay or pasture. The vegetative cover helps control erosion. Smoothing and shaping of gullies are needed in a few places. Overgrazing or grazing when the soil is too wet causes surface compaction, excessive runoff, and poor tilth. Proper stocking, controlled grazing, and weed and brush control help slow runoff, maintain tilth, and reduce compaction.

This soil is moderately suited to cherrybark oak, loblolly pine, Shumard oak, sweetgum, white oak, and yellow-poplar. Plant competition is a moderate limitation; other limitations are slight.

This soil has severe limitations for urban uses. The low strength of the soil for streets and roads, wetness, and high shrink-swell properties are severe limitations for urban uses. Proper design and careful installation will help overcome these limitations. Wetness and the slow permeability of the clayey lower part of the subsoil are severe limitations for use of this soil as septic tank absorption fields. These limitations can be partly overcome by increasing the field size.

This Tippah soil is in capability subclass IIIe and in woodland suitability group 3o7.

TpD3—Tippah silt loam, 5 to 10 percent slopes, severely eroded. This is a sloping to strongly sloping, moderately well drained soil that formed in a mantle of silty material and underlying clay on side slopes on uplands.

Typically, the surface layer is grayish brown silt loam about 3 inches thick. The subsoil extends to a depth of about 60 inches. The upper part to a depth of about 17 inches is yellowish red silty clay loam; to a depth of about 24 inches, it is silty clay loam mottled in shades of red and brown; to 36 inches, it is red clay mottled in shades of gray and brown; and the lower part is clay mottled in shades of red, gray, and brown.

In most areas, the original surface layer has been removed by erosion, and much of the surface layer is subsoil material. In some places, the surface layer is a mixture of original topsoil and subsoil. Rills and shallow gullies are common, and in places, a few deep gullies that are not crossable with farm equipment have formed.

This soil ranges from very strongly acid to medium acid throughout. Permeability is moderate in the upper part of the subsoil and is slow in the lower part. Available water capacity is high. Runoff is rapid, and erosion is a severe hazard. The high water table is perched within 2 to 2 1/2 feet of the surface in wet seasons. The rooting zone is deep and easily penetrated by plant roots.

Included in mapping are small areas of Providence soils on uplands. Also, a few small areas of less eroded soils are included.

Most areas of this soil are used for pasture or as woodland. This soil is poorly suited to row crops, truck crops, and small grains. Because of the erosion hazard, this soil is better suited to a permanent plant cover of grasses and legumes or trees.

This soil is moderately suited to grasses and legumes for hay and pasture. The plant cover helps control erosion. Overgrazing increases runoff and the hazard of erosion. Proper stocking, controlled grazing, and weed and brush control will help slow runoff and control erosion. Smoothing of rills and shaping of gullies are necessary for the use of some machinery.

This soil is moderately suited to cherrybark oak, loblolly pine, Shumard oak, sweetgum, white oak, and yellow-poplar. Plant competition is a moderate limitation; other limitations are slight.

This soil has severe limitations for urban uses. Low strength of this soil for streets and roads, wetness, steepness of slopes for small commercial buildings, and the high shrink-swell properties are the main limitations. Proper design and careful installation will partly overcome these limitations. Wetness and the slow permeability of the lower part of the subsoil are severe limitations for use of this soil as septic tank absorption fields. These limitations can be partly overcome by increasing the size of the field and constructing it on the contour.

This Tippah soil is in capability subclass VIe and in woodland suitability group 3o7.

Prime farmland

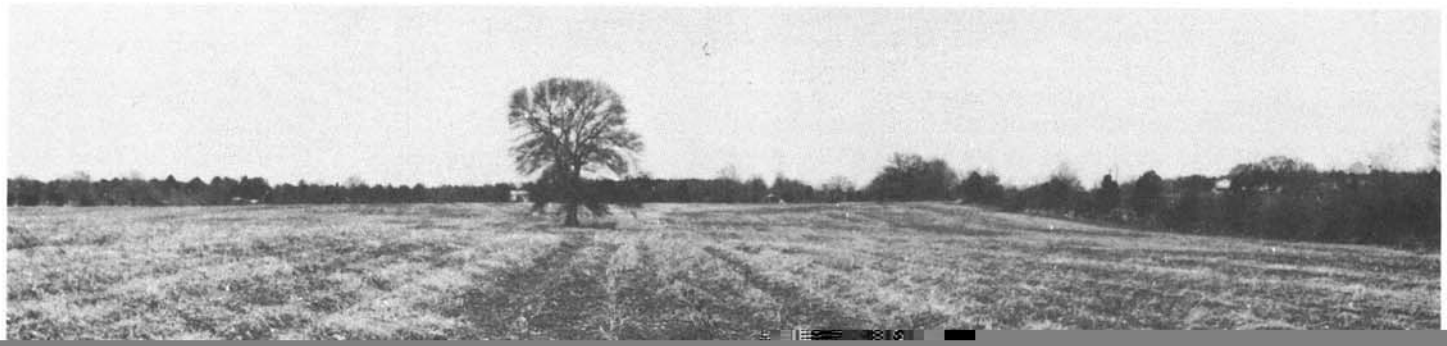
This section defines and discusses prime farmland, and the soils that are prime farmland in Madison County.

more erodible, droughty, difficult to cultivate, and usually less productive than prime farmland.

TpB2 Tippah silt loam, 2 to 5 percent slopes, eroded

The location of each map unit is shown on detailed soil maps in the back of this publication. The soil qualities that affect use and management are described in the section "Detailed soil map units." The extent of each listed map unit is shown in table 4. This list does not constitute a recommendation for a particular land use.

Use and management of the soils



and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth,

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

Class VI soils have severe limitations that make them

other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

Woodland management and productivity

Joseph V. Zary, forester, Soil Conservation Service, helped prepare this section.

Madison County is 41 percent, or about 198,000 acres, woodland. About 66 percent of the woodland is owned by miscellaneous private owners, about 17 percent is owned by farmers, about 13 percent is owned by the forest industry, and about 4 percent is in other public ownership (*13*).

Soils influence the growth of tree crops by providing a reservoir of moisture and all essential elements for growth except those that are derived from the atmosphere—carbon and oxygen. There is a strong relationship between the production of wood and various soil characteristics.

The kind of tree and its growth show a direct relationship between soil depth, texture, structure, topographic position, and inherent fertility.

The forest may be subdivided into forest types. Such types have distinct individuality that may require separate treatment. Generally, types are based on species composition, site quality, or age. As used in this survey, forest types are stands of trees of similar character, composed of the same species, and growing under the same ecological and biological conditions. The forest types are named for the tree species which are present in the greatest abundance and frequency (*13*).

The *oak-gum-cypress* forest type is most important. This includes bottom land forest, mainly tupelo, blackgum, sweetgum, oaks, or southern baldcypress, singly or in combination; where pines make up 25 to 50 percent, the stand would be classified oak-pine. In 1977, the oak-gum-cypress forest type was on about 58,100 acres, or 29 percent, of the woodland in the county. Commonly associated trees include water oak, willow oak, and green ash.

The *loblolly-shortleaf* forest type ranks second in importance. This type includes mainly softwoods, but hardwoods, usually upland oaks, make up 25 to 50 percent of the stand. In 1977, the loblolly-shortleaf forest type was on about 48,000 acres, or 24 percent, of the woodland throughout the county. Commonly associated trees include hickory, sweetgum, blackgum, and yellow-poplar.

The *oak-hickory* forest type ranks third in importance. This type includes mainly hardwoods, usually upland oaks, but softwoods make up 25 to 50 percent of the stand. In 1977, the oak-hickory forest type was on about 46,200 acres, or 23 percent, of the woodland in the county. Commonly associated trees include yellow-poplar, maple, and elm.

The *oak-pine* forest type ranks fourth in importance. This type includes mainly hardwoods (usually upland oaks), but softwoods, except cypress, make up 25 to 50 percent of the stand. In 1977, the oak-pine forest type was on about 33,000 acres, or 17 percent, of the woodland throughout the county. Commonly associated trees include hickory, sweetgum, blackgum, and yellow-poplar.

The *longleaf-slash pine* forest type is fifth in importance. This type includes forests in which 50 percent or more of the stand is longleaf or slash pine, singly or in combination. This forest type was on 6,600 acres, or about 3 percent, of the woodland in the county. Commonly associated trees include other southern pines, oak, and gum.

The loblolly-shortleaf, oak-hickory, longleaf-slash, and oak-pine forest types are mainly on lower slopes to upper slopes and ridges throughout the county. The oak-hickory forest type and the oak components of the oak-pine forest type are in upland positions.

In terms of cubic feet of growing stock, board feet of saw timber, distribution, and acreages which they occupy, individual species would rate in the following order: pine; northern red oak; white oak; sweetgum, tupelo, and blackgum; hickory, red maple, and elm; yellow-poplar; and sugarberry (*7*).

The tree crops harvested in Madison County help support a substantial timber economy in central Mississippi and a number of wood-using industries in the county itself.

Presently, two pulpwood dealers for pine and hardwood are located in the county, eight secondary wood-using industries mainly for manufacturing caskets, furniture, turned-wood furniture parts, dimension stock and frames, and cabinets for television and stereo sets

a soil has more than one limitation, the priority is as follows: w, t, and s.

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

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

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

Woodland understory vegetation

David W. Sanders, grassland conservationist, Soil Conservation Service, helped prepare this section.

Understory vegetation consists of grasses, forbs, shrubs, and other plants. Some woodland, if well managed, can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive.

Significant changes in kinds and abundance of plants occur as the canopy changes, often regardless of grazing use. Therefore, the forage value rating of grazable woodland in this survey is not an ecological

The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface.

Wildlife habitat

Charles E. Hollis, wildlife biologist, Soil Conservation Service, helped prepare this section.

Madison County provides habitat for a wide variety of wildlife species, both game and nongame. Some species such as the white-tailed deer, cottontail rabbit, squirrel, beaver, and mourning dove have large stable populations; however, the American alligator, red-cockaded woodpecker, river otter, and bald eagle are present only as remnant population. Still other species such as the black bear, red wolf, and cougar are now extremely rare or extinct from this part of their former range.

Of all the factors which have affected wildlife, man's use of the land is the most important. Man changed it from one habitat type to another or eliminated it as a suitable habitat; the wildlife species and population levels of the area changed accordingly.

The second most important factor affecting wildlife is the soil. The soil directly affects the kinds and amount of vegetation that is available for use by wildlife as food and cover. If the soil has the potential, desired wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining and managing

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, soil reaction, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and millet (fig. 12).

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, soil reaction, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, lovegrass, lespedeza, clover, and alfalfa.

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, soil reaction, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, signalgrass, beggarweed, woolly croton,

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay

overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

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

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

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

The ratings in table 12 are based on soil properties

layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading.

thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, and toxic

material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

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

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

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that

permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by slope and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

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

Grassed waterways are natural or constructed

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

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of

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

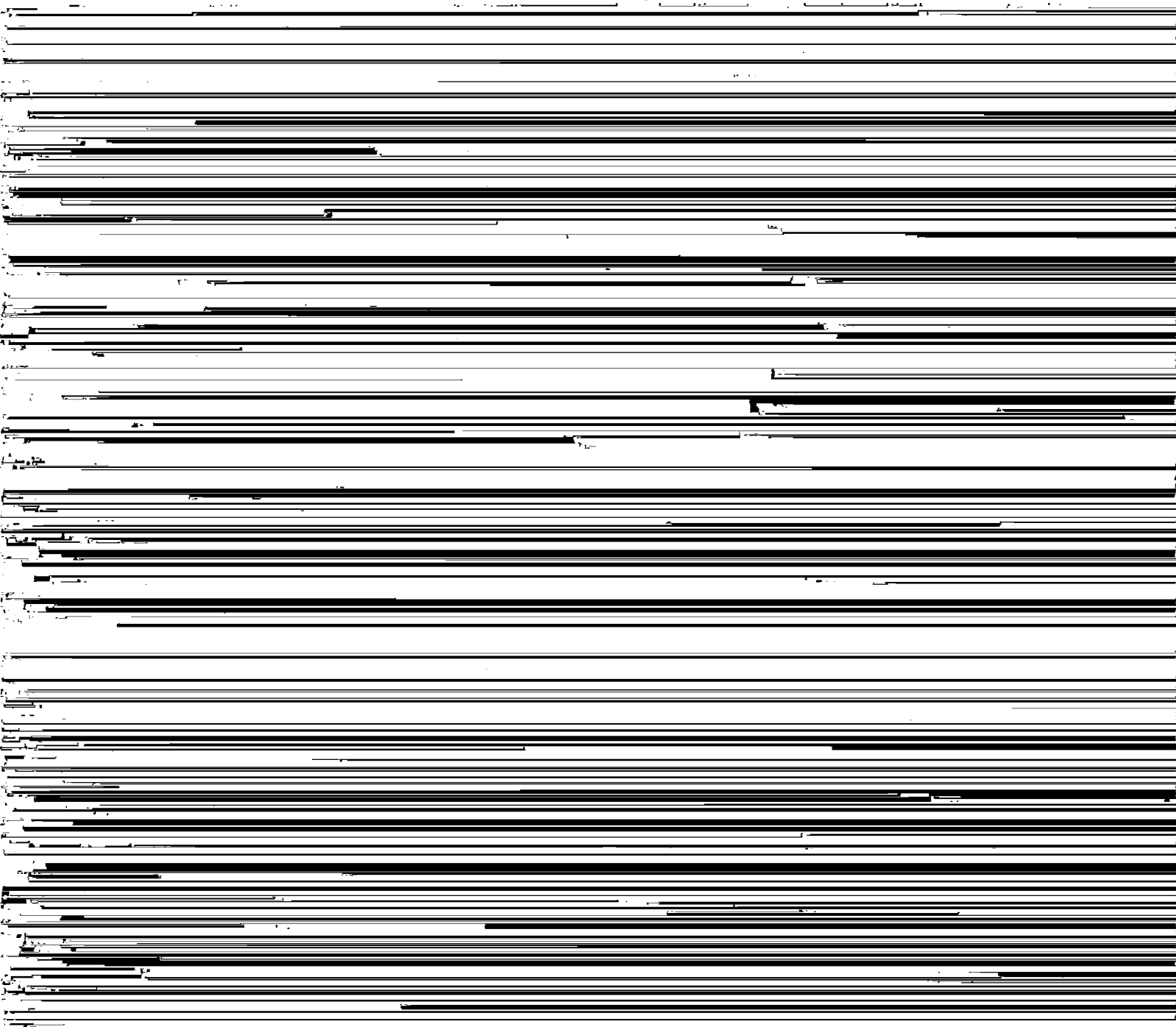
Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate 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.

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



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

than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of sand, silt, or clay deposited . .

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

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

Physical and chemical analyses of selected soils

D. E. Pettry, agronomist, Department of Agronomy, Mississippi Agricultural and Forestry Experiment Station, Mississippi State University, helped prepare this section.

The results of physical analyses of several typical

surface tends to crust, which may hinder plant emergence.

Some soils in the county, such as Siwell and Byram soils, are silty in the surface layer and upper part of the subsoil and are clayey in the lower part. The clayey part is dominated by montmorillonitic clay. This type of clay is sticky and plastic when wet and swells and shrinks upon wetting and drying.

The deep, loamy soils on the ridgetops and side slopes of ridges in the eastern part of the county, such as Smithdale soils, have a relatively high sand content. The coarse textured surfaces enhance rapid water infiltration; the soils tend to be droughty.

Soil chemical properties, in combination with other soil features, such as permeability, structure, texture, and

properties as differentiating criteria in some categories of the system. The Alfisol and Ultisol orders, which are classes in the highest category in the system, are separated on the basis of percentage base saturation deep in the subsoil. Ultisols have base saturation less than 35 percent in the lower part of the soil; in Alfisols, such values are greater than 35 percent. For example, Bonn soils have base saturation levels greater than 35 percent at depths below 4 feet; they are Alfisols.

Engineering index test data

Table 20 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil series and their morphology." The soil samples were tested by the Mississippi State Highway Department Testing Division, Jackson, Mississippi.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); Shrinkage—T 92 (AASHTO), D 427 (ASTM); and Volume change (Abercrombie)—Georgia Highway Standard.

Classification of the soils

which are in lower lying areas, do not have bedding planes. Morganfield soils, which are on natural levees and in slightly higher positions, do not have mottles of chroma 2 within 20 inches of the surface. Riedtown soils, which are in positions similar to those of Adler soils, have a brown cambic horizon and do not have bedding planes.

Typical pedon of Adler silt loam; about 2.25 miles south of Flora, on State Highway 22, 0.8 mile west along drainage ditch, and 200 foot north of ditch; NE1/4NE1/4

plains, have grayer subsoil. Morganfield soils, which are on slightly higher areas of flood plains, are well drained and do not have mottles of chroma 2 or less within 20 inches of the surface. Oaklimeter soils, which are in slightly lower positions on flood plains, have mottles of chroma 2 or less within 24 inches of the surface. Siwell soils, which are on the uplands, have alkaline clayey substrata at depths of less than 48 inches.

Typical pedon of Ariel silt loam; north of Canton along

The B21b and B22b horizons are yellowish brown, dark grayish brown, or dark yellowish brown that have few to many mottles in shades of gray and brown.

Bonn series

The Bonn series consists of poorly drained soils that are high in exchangeable sodium. These soils formed in silty material on low terraces and in small depressions on flood plains. Slopes range from 0 to 1 percent. The soils of the Bonn series are fine-silty, mixed, thermic Glossic Natraqualfs.

Bonn soils are associated with Calloway, Grenada, and Loring soils. Calloway soils, which are on slightly higher areas on uplands and stream terraces, have a fragipan. Grenada soils, which are on higher stream terraces, are better drained and have a fragipan. Loring soils, which are on ridgetops and side slopes, have

B22tg—38 to 46 inches; grayish brown (10YR 5/2) silty clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic sturcture parting to moderate medium subangular blocky; firm; few fine roots; few small pores; few medium black concretions; strongly acid; gradual wavy boundary.

B3—46 to 55 inches; yellowish brown (10YR 5/4) silt loam; common medium faint light brownish gray (10YR 6/2) mottles; massive parting to weak fine subangular blocky structure; friable; few fine vesicles; few fine and medium black concretions; neutral; gradual smooth boundary.

Cg—55 to 72 inches; light brownish gray (10YR 6/2) silt loam; many coarse distinct yellowish brown (10YR 5/8) mottles; massive; friable; few pockets of gray silt; common fine and medium black concretions; mildly alkaline.

Solum thickness ranges from 40 to 60 inches. Exchangeable sodium saturation ranges from 15 to 50

feet east of county road; SW1/4SE1/4 sec. 6, T. 10 N., R. 4 E.

Ap—0 to 5 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.
C1—5 to 10 inches; pale brown (10YR 6/3) sandy loam; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.
C2—10 to 13 inches; brown (10YR 5/3) loamy sand; single grained; loose; few fine roots; medium acid; abrupt smooth boundary.
C3—13 to 16 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; very friable; few

Typical pedon of Bude silt loam, 0 to 2 percent slopes; 4.5 miles west of Madison-Leake County line along Natchez Trace Parkway, 175 feet south of Parkway, and 90 feet southwest of woodland; NW1/4SW1/4 sec. 9, T. 9 N., R. 5 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; many fine roots; medium acid; abrupt smooth boundary.
B21—7 to 12 inches; yellowish brown (10YR 5/4) silt loam; few medium distinct grayish brown (10YR 5/2) mottles; weak fine and medium subangular blocky

IIB'x4—52 to 62 inches; gray (10YR 6/1) silt loam; common medium distinct brownish yellow (10YR 6/8) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm, slightly compact and brittle; common fine black and brown concretions; very strongly acid.

Solum thickness is 60 inches or more. Reaction ranges from very strongly acid to medium acid throughout except where the surface has been limed. Brown and black concretions range from none to many throughout the soil. Depth to the fragipan ranges from 18 to 30 inches.

The Ap horizon is dark grayish brown, dark brown, or yellowish brown. The A2 horizon, if present, is pale brown or is light yellowish brown.

The B2 horizon is yellowish brown, strong brown, or light yellowish brown and has few to many mottles of chroma 2 or less. It is silt loam or silty clay loam. The B'x horizon is mottled in shades of gray and brown, or it is shades of gray and has brownish mottles. This horizon is silt loam or silty clay loam.

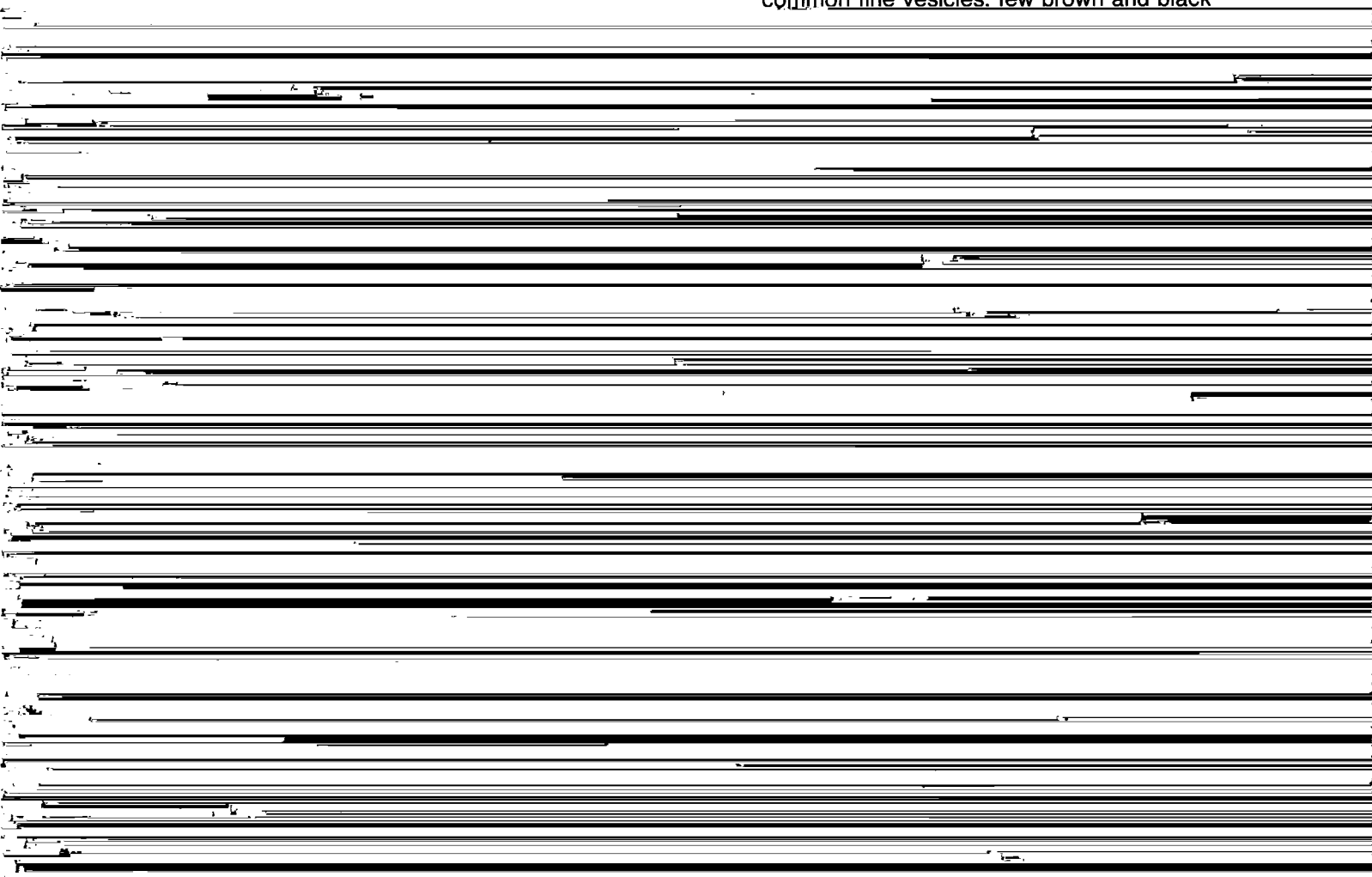
The IIB'x horizon is mottled in shades of gray, brown, and yellow, or it has a gray matrix. The IIB'x horizon is silt loam or clay loam. The sand content of the soil is greater than 15 percent at depths of 48 inches or less. In some places, there are underlying horizons of sandy loam.

B21t—5 to 14 inches; strong brown (7.5YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; many fine roots; common black stains; thin patchy clay films on faces of peds; very strongly acid; clear smooth boundary.

B22t—14 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; few fine black concretions; few fine clay films on faces of peds; yellowish brown (10YR 5/4) stains along root channels; very strongly acid; gradual irregular boundary.

Bx1—20 to 30 inches; yellowish brown (10YR 5/4) silt loam; few medium distinct light brownish gray (10YR 6/2) and many medium dark yellowish brown (10YR 4/4) mottles; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; firm, compact and brittle in 70 percent of the horizon; few fine roots in cracks; pale brown silt coatings on faces of peds; common fine and medium brown and black concretions; patchy clay films in interior of peds; very strongly acid; gradual irregular boundary.

Bx2—30 to 44 inches; mottled yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), dark yellowish brown (10YR 4/4), and pale brown (10YR 6/3) silt loam; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; firm, compact and brittle in 75 percent of the horizon; common fine vesicles; few brown and black



content in the upper 20 inches of the B horizon ranges from 20 to 32 percent.

The Bx horizon is brown, strong brown, yellowish brown, or dark yellowish brown or mottled in shades of brown and gray. Texture is silt loam or silty clay loam.

The B23t horizon, if present, is yellowish brown, dark yellowish brown, or light olive brown and has few to many mottles in shades of gray, or it is mottled in shades of brown and gray. Texture is silt loam or silty clay loam.

The IIC horizon is yellowish brown, light olive brown, or

B21tg—23 to 34 inches; gray (10YR 6/1) silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; gray silt coats on faces of peds mostly in upper part; patchy clay films on faces of peds; tongues of A2 extend through horizon; few fine and medium black concretions; very strongly acid; gradual wavy boundary.

B22tg—34 to 44 inches; light brownish gray (10YR 6/2) silty clay loam; common medium distinct yellowish

lower positions of uplands and on stream terraces, are poorly drained, and the lower part of the A horizon and upper part of the B horizon have matrix colors of chroma 2 or less. Grenada soils, which are in slightly higher positions, are better drained and have a browner, less gray upper part of the B horizon. Memphis soils, which are on uplands and terraces, have slopes of 0 to 40 percent and are well drained. They do not have a fragipan and do not have a seasonal high water table.

Typical pedon of Calloway silt loam, 0 to 1 percent

B'x2—53 to 60 inches; mottled yellowish brown (10YR 5/8), gray (10YR 5/1), and very pale brown (10YR 7/4) silt loam; weak coarse prismatic structure parting to weak to moderate coarse subangular blocky; firm, compact and brittle; patchy clay films on faces of peds and in pores; few fine voids; polygonal cracks filled with gray silt material; medium acid.

Solum thickness ranges from 60 to 70 inches. Depth to the fragipan ranges from 14 to 38 inches. Reaction of

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; abrupt smooth boundary.
B1—4 to 8 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; few fine roots; few wormcasts; strongly acid; abrupt smooth boundary.
B21—8 to 16 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few wormcasts; patchy clay films in root channels; strongly acid; clear smooth boundary.
B22—16 to 27 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; few thin patchy clay films on faces of peds; very strongly acid; clear smooth boundary.
B23—27 to 48 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light brownish gray (10YR 6/2) and common medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.
B3—48 to 56 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct gray (10YR 6/1) mottles; weak medium subangular blocky structure;

Columbus series

The Columbus series consists of moderately well drained soils that formed in loamy sediment on low stream terraces and flood plains. Slopes range from 0 to 2 percent. The soils of the Columbus series are fine-loamy, siliceous, thermic Aquic Hapludults.

Columbus soils are associated with Calhoun, Cascilla, and Daleville soils. Calhoun soils, which are in low places on uplands and terraces, have grayer subsoil. Cascilla soils, which are on slightly higher areas of natural levees of flood plains, are in a fine-silty family. Daleville soils, which are in low places or swags of terraces and on flood plains, have grayish subsoil.

Typical pedon of Columbus loam, in an area of Columbus-Daleville association; 1.5 miles west of the Madison-Leake County line on Dummy Line Road and 200 feet north of road; SE1/4NW1/4 sec. 11, T. 9 N., R. 5 E.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable many fine roots; very strongly acid; abrupt smooth boundary.
B21t—5 to 22 inches; yellowish brown (10YR 5/6) clay loam; moderate fine and medium subangular blocky structure; firm, slightly plastic; few fine roots; continuous clay films on faces of peds; very strongly

The B3 horizon is light brownish gray or grayish brown and has mottles in shades of brown and red, or it is mottled in shades of gray, brown, and red. Texture is sandy clay loam, fine sandy loam, or loam.

The IIC horizon is strong brown or yellowish brown and has grayish and brownish mottles, or it is mottled in shades of brown, gray, and red.

B23tg—36 to 55 inches; gray (10YR 6/1) sandy clay loam; many medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm, plastic; few patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B24tg—55 to 65 inches; light gray (10YR 7/1) sandy

B21—5 to 15 inches; dark brown (10YR 4/3) silt loam; few medium distinct grayish brown (10YR 5/2) mottles; weak fine and medium subangular blocky structure; friable; few fine roots; few fine brown and black concretions; very strongly acid; gradual smooth boundary.

B22—15 to 30 inches; light brownish gray (10YR 6/2) silt loam; few medium distinct yellowish brown (10YR 5/4) mottles; weak fine and medium subangular blocky structure; friable, slightly brittle; few fine roots; few fine pores; few silt coats on faces of peds; few black and brown concretions; very strongly acid; clear irregular boundary.

A2b—30 to 48 inches; light gray (10YR 7/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; friable, slightly brittle and compact; few fine roots; many fine voids; gray silt coats or tongues about 3/4 inch wide between prisms; many fine and medium black and brown concretions; very strongly acid; clear irregular boundary.

A&B—48 to 60 inches; light brownish gray (10YR 6/2) silt loam; many medium distinct yellowish brown (10YR 5/4) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; friable, mottled part slightly brittle; gray tongues of silt 1/2 inch wide between prisms; few voids; nearly continuous clay films on faces of prisms; few fine and medium black and brown concretions; strongly acid; clear irregular boundary.

Grenada series

The Grenada series consists of moderately well drained soils that have a fragipan. These soils formed in silty material on uplands and stream terraces. Slopes range from 0 to 5 percent. The soils of Grenada series are fine-silty, mixed, thermic Glossic Fragiudalfs.

Grenada soils are associated with Bonn, Byram, Calhoun, Calloway, Loring, and Memphis soils. Bonn soils, which are on low terraces and flood plains, are poorly drained and have horizons below a depth of 16 inches that are high in exchangeable sodium. Byram soils, which are on ridgetops and side slopes, have clayey horizons between 4 and 6 feet. Calhoun soils, which are in the lower positions of uplands or terraces, have subsoil that has chroma of 2 or less. Calloway soils, which are on slightly lower areas, have grayish mottles within 16 inches of the surface. Loring soils, which are in higher positions of the landscape, are better drained. Memphis soils, which are in higher positions, are well drained silty soils that do not have a fragipan.

Typical pedon of Grenada silt loam, 0 to 2 percent slopes; 6 miles north of Canton, 1,000 feet south of State Highway 16 at Old Yazoo City Road, and 660 feet west of Old Yazoo City Road; NE1/4SE1/4 sec. 21, T. 10 N., R. 2 E.

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

B'x2—38 to 54 inches; dark yellowish brown (10YR 4/4) B21t—4 to 24 inches; yellowish red (5YR 5/6) silt loam;

Loring series

The Loring series consists of moderately well drained soils that have a fragipan. These soils formed in silty material on uplands and stream terraces. Slopes range from 0 to 12 percent. The soils of the Loring series are fine-silty, mixed, thermic Typic Fragiudalfs.

Loring soils are associated with Bonn, Byram, Grenada, Memphis, Siwell, and Tippah soils. Bonn soils, which are on low terraces and flood plains, are poorly drained and have horizons at depths below 16 inches that are high in exchangeable sodium. Byram soils, which are in positions similar to those of Loring soils, are underlain with alkaline clayey material at a depth of 4 to 6 feet. Grenada soils, which are in lower positions on uplands and stream terraces, have an A'2 horizon above the fragipan. Memphis soils, which are in higher positions, are better drained and do not have a fragipan. Siwell and Tippah soils are in positions similar to those of Loring soils on uplands. Siwell soils are underlain with alkaline clay in the upper 48 inches, and Tippah soils are underlain with acid clay in the upper 48 inches.

Typical pedon of Loring silt loam, 2 to 5 percent slopes, eroded; 1.5 miles east of Big Black River, 0.5 mile east of State Highway 16, 400 feet east of [illegible]

Bx2—45 to 52 inches; dark brown (7.5YR 4/4) silt loam; common medium faint pale brown (10YR 6/3) and gray (10YR 6/1) mottles; weak medium prismatic structure parting to weak medium and fine subangular blocky; firm, compact and brittle; few streaks and seams of gray silt; patchy clay films; very strongly acid; gradual wavy boundary.

C—52 to 70 inches; dark brown (7.5YR 4/4) silt loam; few medium faint pale brown (10YR 6/3) and few medium distinct gray (10YR 6/1) mottles; massive; firm, slightly compact and brittle; few fine black concretions; strongly acid.

Solum thickness ranges from 45 to 75 inches. Depth of the fragipan ranges from 22 to 35 inches. The A and B horizons range from very strongly acid to medium acid. The C horizon, where present, ranges from very strongly acid to slightly acid. Sand content is usually less than 5 percent throughout, but it may range up to 15 percent. Content of black and brown concretions ranges from few to common.

The A horizon is brown, strong brown, or yellowish brown.

The B1 and B2t horizons are dark brown, strong brown, yellowish brown, or dark yellowish brown. Texture

B21—7 to 15 inches; dark brown (10YR 4/3) silt loam; common medium faint grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine black and brown concretions; neutral; clear smooth boundary.

B22—15 to 30 inches; grayish brown (10YR 5/2) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; friable; few fine roots and pores; common fine black and brown concretions; slightly acid; clear wavy boundary.

Ab&B23gb—30 to 44 inches; gray (10YR 5/1) silt loam; few fine distinct yellowish brown (10YR 5/4) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; friable; few gray tongues and pockets of silt; slightly brittle and compact; few fine pores; common fine and medium black and brown concretions; neutral; clear wavy boundary.

B24gb—44 to 70 inches; light brownish gray (2.5Y 6/2)

Typical pedon of Memphis silt loam, 0 to 2 percent slopes; 9 miles west of Flora, 320 feet south of east-west field road, and 400 feet east of Hinds County line; SW1/4NW1/4 sec. 18, T. 8 N., R. 2 W.

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

B21t—6 to 24 inches; dark brown (7.5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm, slightly plastic; many fine roots; continuous clay films on peds; few dark coatings on faces of some peds; few pale brown silt coatings on faces of some peds; very strongly acid; clear smooth boundary.

B22t—24 to 36 inches; dark brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable, slightly plastic; few fine roots; thin patchy clay films on faces of some peds; pale brown silt coatings on faces of peds; very strongly acid; clear

which are in areas similar to Morganfield soils on the flood plains, do not have bedding planes.

Typical pedon of Morganfield silt loam; 4 miles south of Flora on State Highway 22, 2.5 miles west on county road, 350 feet south of county road, and 200 feet east of Spring Creek; SW1/4SE1/4 sec. 27, T. 8 N., R. 2 W.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

C1—7 to 27 inches; dark yellowish brown (10YR 4/4) silt loam; structureless; friable; few fine roots; thin pale brown horizontal strata; medium acid; gradual smooth boundary.

C2—27 to 38 inches; dark brown (10YR 4/3) silt loam; medium distinct light brownish gray (10YR 6/2) mottles; friable; few fine roots; few fine brown concretions; thin pale brown horizontal strata; medium acid; clear smooth boundary.

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

B21—5 to 20 inches; dark brown (10YR 4/3) silt loam; few fine faint pale brown mottles; weak medium subangular blocky structure; friable; many fine roots; few fine black concretions; strongly acid; clear smooth boundary.

B22—20 to 31 inches; dark brown (10YR 4/3) silt loam; common medium distinct light brownish gray (10YR 6/2) and pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine brown and black concretions; strongly acid; gradual wavy boundary.

B23b&A2b—31 to 40 inches; mottled gray (10YR 6/1), very pale brown (10YR 7/3), and yellowish brown (10YR 5/4) silt loam; weak coarse prismatic

are on lower lying stream terraces and uplands, have grayish mottles within 16 inches of the surface. Byram soils, which are on adjacent ridgetops and side slopes, are underlain with alkaline clayey material at depths of 4 to 6 feet. Lexington soils, which are on side slopes, do not have a fragipan. Smithdale soils, which are on steeper side slopes, do not have a fragipan and are in a fine-loamy family. Tippah soils, which are in positions similar to those of Providence soils, are underlain with acid clay at a depth of 24 to 36 inches.

Typical pedon of Providence silt loam, 2 to 5 percent slopes, eroded; 0.75 mile north of Camden on State Highway 17 and 300 feet east of the highway; NE1/4NW1/4 sec. 24, T. 11 N., R. 4 E.

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; few medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; many fine roots; medium acid; abrupt smooth boundary.

B1—6 to 9 inches; strong brown (7.5YR 5/8) silt loam; weak fine subangular blocky structure; friable; few fine roots; strongly acid; clear smooth boundary.

B21t—9 to 14 inches; dark brown (7.5YR 4/4) silt loam; moderate medium and fine subangular blocky structure; friable; many fine roots; patchy clay films on faces of peds; medium acid; clear smooth boundary.

B22t—14 to 22 inches; strong brown (7.5YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; few patchy clay films; few fine black concretions; medium acid; clear irregular

IIB23t—52 to 70 inches; yellowish red (5YR 5/6) sandy clay loam; common medium distinct gray (10YR 6/1) and yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; firm; patchy clay films; very strongly acid.

Depth to the fragipan ranges from 18 to 38 inches. The reaction of the soil ranges from very strongly acid to medium acid throughout except where the surface has been limed.

The Ap horizon is grayish brown, dark brown, yellowish brown, or light yellowish brown.

The B1 and B2t horizons are strong brown, yellowish brown, dark brown, or yellowish red. Texture is silt loam or silty clay loam. The Bt horizon usually contains 20 to 30 percent clay and 5 to 15 percent sand.

The Bx and IIBx horizons have yellowish red to yellowish brown matrix colors that are mottled in shades of gray, brown, and red, or they are mottled yellow, brown, gray, and red. The upper part of the fragipan is silty clay loam or silt loam. The lower part is clay loam, sandy clay loam, or sandy loam. It ranges from firm to very firm. The IIBt horizon ranges from red to gray. Texture is sandy loam, loam, sandy clay loam, or clay loam.

Riedtown series

The Riedtown series consists of moderately well drained soils that formed in silty alluvium on flood plains. Slopes range from 0 to 2 percent. The soils of the

B21—6 to 14 inches; dark brown (10YR 4/3) silt loam; few fine faint pale brown mottles; weak medium

have underlying alkaline clayey material at a depth of 4 to 6 feet. Loring soils have a fragipan.

The A horizon is dark brown, brown, or yellowish brown.

The B2t horizon is yellowish brown, brown, or strong brown. In places, the lower part of the Bt horizon has few to common mottles in shades of brown, gray, or red. Texture is silt loam or silty clay loam.

The IIB2t horizon is light olive brown or yellowish brown and has mottles in shades of gray and brown, or

B22t—28 to 47 inches; red (2.5YR 4/8) sandy loam; moderate medium subangular blocky structure; friable; common to many uncoated sand grains; some sand grains coated with clay; slightly compact in places; few fine roots and root channels; very strongly acid; gradual wavy boundary.

B23t—47 to 80 inches; red (2.5YR 4/6) sandy loam; few medium distinct strong brown (7.5YR 5/6) mottles;

B22t—11 to 18 inches; strong brown (7.5YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; many fine roots; patchy clay films on faces of peds; strongly acid; clear smooth boundary.

B23t—18 to 27 inches; strong brown (7.5YR 5/8) silt loam; common medium distinct gray (10YR 6/1) and pale brown (10YR 6/3) mottles; moderate fine and medium subangular blocky structure; cracks filled with gray silt; slightly firm; patchy clay films on faces of peds; few medium brown concretions; very strongly acid; clear wavy boundary.

B24t—27 to 35 inches; strong brown (7.5YR 5/6) silt loam; few medium distinct gray (10YR 6/1) mottles; moderate medium subangular blocky structure; cracks filled with gray silt; firm; patchy clay films on faces of peds; few fine brown concretions; very strongly acid; clear wavy boundary.

IIB25t—35 to 48 inches; mottled red (2.5YR 4/6) and yellowish brown (10YR 5/6) clay; weak coarse subangular blocky structure; firm; thin continuous clay films; strongly acid; gradual wavy boundary.

IIB26t—48 to 68 inches; red (2.5YR 4/6) clay; common medium distinct gray (10YR 6/1) and yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; thin continuous clay films; firm; strongly acid.

Solum thickness is 60 inches or more. Reaction of the soil ranges from very strongly acid to medium acid throughout except where the surface has been limed.

The A horizon is yellowish brown, pale brown, or dark grayish brown.

The B21t horizon is reddish brown, strong brown, or yellowish red. Texture is silt loam or silty clay loam.

The B22t, B23t, and B24t horizons have matrix colors similar to those of the B21t horizon; but they have few to many mottles in shades of brown and gray. Texture is silt loam or silty clay loam.

The IIBt horizon is red, yellowish brown, or gray; or it is mottled in shades of red, brown, or gray. Texture is clay or silty clay.

Formation of the soils

In this section the factors of soil formation are discussed and related to the soils of Madison County. In addition, the processes of soil formation are described.

Factors of soil formation

This section discusses the major factors and processes that have affected the formation and morphology of the soils of Madison County. Soil, as used in this discussion, is 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 that has been conditioned by relief over periods of time.

Soils are formed through the interaction of five major factors: climate, plant and animal life (especially plants), parent material, relief, and time. The relative influence of each factor varies from place to place, and in some places, one factor dominates in the formation of a soil. Local variation in soils in Madison County is mainly the result of differences in parent material, relief, time, and the effects of man.

Climate

The climate of Madison County is of the humid, warm-temperate, continental type. Winters are mild and generally have short periods of freezing temperatures. Summers are fairly hot and occasionally the temperatures are more than 100° F.

This climate favors rapid chemical reactions. When rainfall is heavy late in winter and early in spring, soils are leached of soluble materials. Little organic matter accumulates in the soils. Climate is fairly uniform throughout the county and is not a major factor in producing differences in the soils. Normal average temperature and rainfall for Madison County are given in

Vegetation, including hardwood and pine trees, has greatly affected soil formation in Madison County.

Parent material

Parent material is the unconsolidated mass in which a soil develops. The parent material of the soils in Madison County consists of deep loess, thin loess, marine deposits, and alluvium.

Loess is the silt from glacial rock. This material was carried southward by waters from melting glaciers and deposited on flood plains of the Mississippi River. Later this silty material was re-deposited by wind on the older formations. In the central and western parts of the county, Calloway, Grenada, Loring, and Memphis soils formed in deep loess on uplands.

Some soils in Madison County formed in more than one kind of parent material. The upper horizons formed in thin loess less than 4 feet thick, and the lower horizons formed in acid marine deposits. Bude, Providence, and Tippah soils formed in this combination of parent materials.

In the southeastern part of the county, Byram and Siwell soils formed in weathered loess over calcareous marine clay deposits.

The parent materials in the steeper areas of the eastern part of the county are marine deposits. Soils that formed in these sediments are mixtures of sand, silt, and clay and have much more sand than soils formed in loess. Smithdale soils formed in this kind of parent material.

The soils along streams throughout the county are formed in alluvium washed from the surrounding uplands and re-deposited by the streams on the flood plains. Adler, Ariel, Bruno, Cascilla, Gillsburg, McRaven, Morganfield, Oaklimeter, and Riedtown soils formed in

that formed in well drained sites include the Memphis and Smithdale soils. The Memphis soils have brownish subsoil, and the Smithdale soils have reddish subsoil, which is characteristic of soils that form in a well drained environment.

The topography in the central and southwestern parts of Madison County is gently sloping to undulating. Slopes range from 0 to 40 percent. In the extreme southwestern part of the county, the landscape is one of hills that have steep side slopes and narrow valleys. In the eastern and northern parts of the county, the topography ranges from undulating to strongly sloping and hilly. In the northeastern part, the topography is mainly steep hills that have narrow ridgetops and valleys. Some of the highest areas in the county are in the northeastern part. The highest elevation is about 475 feet near Greenwood Cemetery. The lowest elevation is about 140 feet near Big Black River where it flows into Hinds County.

Time

A long time is required for most soils to form. The weathering of soil materials precedes the development

Processes of soil horizon differentiation

Several processes were involved in the formation of soil horizons in the soils of Madison County. These are accumulations of organic matter, leaching of calcium carbonates and bases, reduction and transfer of iron, and formation and translocation of silicate clay minerals. In most soils, more than one of these processes has been active in the development of horizons.

The accumulation of organic matter in the upper part of the soil profile has been important in forming an A1 horizon. Generally, the soils of Madison County are low in content of organic matter.

Carbonates and bases have been leached from nearly all of the soils. Leaching of bases in soils normally precedes translocation of silicate clay minerals. Most of the soils of the county are moderately to strongly leached, and this has contributed to the development of horizons.

Reduction and transfer of iron, a process called gleying, is evident in the poorly drained soils of the county. The gray color in the subsoil horizons indicates the reduction and loss of iron. Some horizons contain reddish-brown mottles and concretions; this indicates segregation of iron.

In soils such as Loring, Memphis, and Providence soils, the translocation of clay minerals has contributed

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single

Broad-base terrace. A ridge-type terrace built to control erosion by diverting runoff along the contour at a nonscouring velocity. The terrace is 10 to 20 inches high and 15 to 30 feet wide and has gently sloping sides, a rounded crown, and a dish-shaped channel along the upper side. It may be nearly level or have a grade toward one or both ends.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

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

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas

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.

Eolian soil material. Earthy parent material accumulated

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.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Green manure crop (agronomy). A soil-improving crop

(1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

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

Invaders. On range, plants that encroach into an area

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind 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. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built

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

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded 1951-73 at Canton, Miss.]

	Temperature				Precipitation			
	2 years in 10 will have at least							

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded 1951-73 at Canton, Miss.]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 17	March 25	April 8
2 years in 10 later than--	March 6	March 20	April 3
5 years in 10 later than--	February 12	March 9	March 25
First freezing temperature in fall:			
1 year in 10 earlier than--	October 28	October 23	October 16
2 years in 10 earlier than--	November 7	October 29	October 20
5 years in 10 earlier than--	November 27	November 9	October 29

TABLE 3.--GROWING SEASON

[Recorded 1951-73 at Canton, Miss.]

Probability	Length of growing season if daily minimum temperature is--		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	246	218	199
8 years in 10	260	227	205
5 years in 10	286	244	217
2 years in 10	313	261	229
1 year in 10	327	270	235

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ad	Adler silt loam	2,625	0.5
Ar	Ariel silt loam	39,290	8.2
Bb	Bonn silt loam	550	0.1
Bc	Bruno-Ariel complex	980	0.2
BdA	Bude silt loam, 0 to 2 percent slopes	975	0.2
BrB2	Byram silt loam, 2 to 5 percent slopes, eroded	7,530	1.6
BrC2	Byram silt loam, 5 to 8 percent slopes, eroded	8,410	1.7
BrC3	Byram silt loam, 5 to 8 percent slopes, severely eroded	960	0.2
BrD3	Byram silt loam, 8 to 12 percent slopes, severely eroded	2,150	0.4
Ca	Calhoun silt loam	2,915	0.6
CbA	Calloway silt loam, 0 to 1 percent slopes	6,185	1.3
CbB	Calloway silt loam, 1 to 3 percent slopes	5,550	1.2
CC	Cascilla-Calhoun association	1,930	0.4
CD	Columbus-Daleville association	10,500	2.2
Gb	Gillsburg silt loam	14,425	3.0
GrA	Grenada silt loam, 0 to 2 percent slopes	5,700	1.2
GrB2	Grenada silt loam, 2 to 5 percent slopes, eroded	8,905	1.9
LoA	Loring silt loam, 0 to 2 percent slopes	1,620	0.3
LoB2	Loring silt loam, 2 to 5 percent slopes, eroded	50,400	10.5
LoC2	Loring silt loam, 5 to 8 percent slopes, eroded	37,610	7.8
LoC3	Loring silt loam, 5 to 8 percent slopes, severely eroded	10,040	2.1
LoD2	Loring silt loam, 8 to 12 percent slopes, eroded	2,805	0.6
LoD3	Loring silt loam, 8 to 12 percent slopes, severely eroded	4,830	1.0
Mc	McRaven silt loam	1,715	0.4
MeA	Memphis silt loam, 0 to 2 percent slopes	975	0.2
MeB2	Memphis silt loam, 2 to 5 percent slopes, eroded	3,670	0.8
MeC2	Memphis silt loam, 5 to 8 percent slopes, eroded	3,815	0.8
MeD2	Memphis silt loam, 8 to 12 percent slopes, eroded	395	0.1
MeD3	Memphis silt loam, 8 to 12 percent slopes, severely eroded	4,905	1.0
MeF2	Memphis silt loam, 12 to 40 percent slopes, eroded	3,825	0.8
MeF3	Memphis silt loam, 12 to 40 percent slopes, severely eroded	4,055	0.8
Mh	Memphis-Udorthents complex, gullied	1,275	0.3
Mo	Morganfield silt loam	6,465	1.3
Oa	Oaklimeter silt loam	26,150	5.4
OG	Oaklimeter-Ariel-Gillsburg association	20,790	4.3
Pa	Pits-Udorthents complex	860	0.2
PoA	Providence silt loam, 0 to 2 percent slopes	925	0.2
PoB2	Providence silt loam, 2 to 5 percent slopes, eroded	23,380	4.9
PoC2	Providence silt loam, 5 to 8 percent slopes, eroded	33,985	7.1
PoC3	Providence silt loam, 5 to 8 percent slopes, severely eroded	8,345	1.7
PrD2	Providence-Lexington complex, 8 to 12 percent slopes, eroded	12,300	2.6

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Cotton lint	Corn	Soybeans	Wheat	Common bermuda-grass	Improved bermuda-grass	Tall fescue
	Lb	Bu	Bu	Bu	AUM*	AUM*	AUM*
Ad---------- Adler	800	100	35	50	7.0	12.0	9.5
Ar---------- Ariel	800	110	40	---	6.0	11.0	10.0
Bb. Bonn							
Bc---------- Bruno-Ariel	550	70	25	---	5.0	7.0	5.0
BdA---------- Bude	625	85	25	---	6.5	9.0	8.0
BrB2---------- Byram	700	85	30	---	7.0	9.5	8.0
BrC2---------- Byram	650	70	25	---	6.5	9.0	7.5
BrC3---------- Byram	---	---	25	---	5.5	7.0	7.0
BrD3---------- Byram	---	---	---	---	5.0	6.5	5.5
Ca---------- Calhoun	400	---	25	---	5.0	6.0	5.0
CbA---------- Calloway	650	85	35	---	6.0	9.0	8.0
CbB---------- Calloway	650	80	35	---	6.5	9.0	8.5
CC:**							
Cascilla----------	---	---	---	---	7.0	8.0	7.0
Calhoun----------	---	---	---	---	5.0	6.0	5.0
CD:**							
Columbus----------	---	---	---	---	4.5	7.0	5.0
Daleville----------	---	---	---	---	5.0	6.0	4.0
Gb---------- Gillsburg	650	90	35	---	7.0	10.0	9.0
GrA---------- Grenada	600	80	35	---	7.0	9.5	8.0
GrB2---------- Grenada	550	75	30	---	7.0	8.0	7.5
LoA---------- Loring	750	90	35	40	7.0	9.0	8.0
LoB2---------- Loring	700	90	30	40	7.0	9.0	8.0
LoC2---------- Loring	650	70	25	35	5.5	8.5	7.5

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Cotton lint	Corn	Soybeans	Wheat	Common bermudagrass	Improved bermudagrass	Tall fescue
	Lb	Bu	Bu	Bu	AUM*	AUM*	AUM*
LoC3---- Loring	600	65	20	30	5.0	8.5	7.0
LoD2---- Loring	500	60	20	30	5.0	8.5	7.0
LoD3---- Loring	450	55	15	25	4.5	7.0	5.5
Mc---- McRaven	700	100	35	---	8.0	10.0	10.0
MeA---- Memphis	800	95	40	40	8.0	10.5	8.5
MeB2---- Memphis	750	90	35	35	7.5	10.0	8.5
MeC2---- Memphis	700	80	30	30	7.0	9.0	7.5
MeD2---- Memphis	600	65	25	25	6.0	8.0	7.0
MeD3---- Memphis	---	---	---	---	5.5	6.5	6.0
MeF2---- Memphis	---	---	---	---	4.5	6.0	5.0
MeF3---- Memphis	---	---	---	---	---	---	---
Mh---- Memphis-Udorthents	---	---	---	---	---	---	---
Mo---- Morganfield	950	115	45	---	8.0	12.0	10.0
Oa---- Oaklimeter	750	95	40	---	9.0	11.0	10.0
OG:**							
Oaklimeter----	---	---	---	---	6.0	7.0	6.0
Ariel----	---	---	---	---	5.5	7.0	6.0
Gillsburg----	---	---	---	---	6.0	8.0	6.0
Pa---- Pits-Udorthents	---	---	---	---	---	---	---
PoA---- Providence	700	80	35	---	8.5	10.0	8.5
PoB2---- Providence	700	80	35	---	8.5	9.5	8.5
PoC2---- Providence	650	70	30	---	7.0	9.0	7.5
PoC3---- Providence	500	55	25	---	6.5	8.5	6.5
PrD2---- Providence-Lexington	---	---	---	---	5.5	8.0	6.0
PrD3---- Providence-Lexington	---	---	---	---	5.0	7.0	5.0

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Cotton lint	Corn	Soybeans	Wheat	Common bermuda-grass	Improved bermuda-grass	Tall fescue
	Lb	Bu	Bu	Bu	AUM*	AUM*	AUM*
Pu---------- Providence-Udorthents	---	---	---	---	---	---	---
Re---------- Riedtown	750	100	40	---	9.0	12.0	9.0
SeB2---------- Siwell	---	---	---	---	7.0	10.0	8.0
SeD3---------- Siwell	---	---	---	---	5.0	7.0	5.0
SpD2---------- Smithdale-Providence	---	---	---	---	5.5	9.0	5.5
SpD3---------- Smithdale-Providence	---	---	---	---	5.0	8.5	5.0
SpE2---------- Smithdale-Providence	---	---	---	---	4.5	8.0	4.5
SR:**							
Smithdale----------	---	---	---	---	---	---	---
Providence----------	---	---	---	---	---	---	---
TpB2---------- Tippah	650	80	35	---	8.5	10.0	8.5
TpC2---------- Tippah	600	70	30	---	7.5	9.0	7.5
TpD3---------- Tippah	---	---	---	---	5.0	7.0	5.0

* 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]

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
Ad---------- Adler	1o4	Slight	Slight	Slight	Moderate	Green ash----------	95	Green ash, eastern cottonwood, sweetgum, American sycamore.
						Eastern cottonwood--	120	
						Water oak----------	100	
						Willow oak----------	100	
						Sweetgum----------	100	
						American sycamore---	115	
Ar----------	1o7	Slight	Slight	Slight	Moderate	Cherrybark oak------	110	Cherrybark oak,

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
CC:*								
Calhoun	3w9	Slight	Severe	Moderate	---	Cherrybark oak	90	Loblolly pine, slash pine.
						Water oak	90	
						Sweetgum	90	
						Loblolly pine	90	
						Slash pine	90	
CD:*								
Columbus	2w8	Slight	Moderate	Slight	Slight	Loblolly pine	90	Loblolly pine, sweetgum, yellow-poplar.
						Sweetgum	85	
						Water oak	90	
						Yellow-poplar	90	
Daleville	2w9	Slight	Severe	Severe	Moderate	Loblolly pine	95	Green ash, loblolly pine, Nuttall oak, Shumard oak, sweetgum.
						Sweetgum	90	
						Water oak	85	
						Willow oak	80	
Gb---------- Gillsburg	2w8	Slight	Moderate	Moderate	Moderate	Cherrybark oak	100	Eastern cottonwood, loblolly pine, sweetgum, American sycamore, yellow-poplar.
						Eastern cottonwood	105	
						Green ash	85	
						Loblolly pine	90	
						Sweetgum	90	
						American sycamore	105	
						Water oak	95	
						Yellow-poplar	105	
GrA, GrB2---------- Grenada	3o7	Slight	Slight	Slight	Slight	Cherrybark oak	85	Cherrybark oak, Shumard oak, water oak, loblolly pine, white oak, slash pine, sweetgum.
						Southern red oak	80	
						Loblolly pine	85	
						Shortleaf pine	75	
						Sweetgum	80	
LoA, LoB2, LoC2, LoC3, LoD2, LoD3--	3o7	Slight	Slight	Slight	Severe	Cherrybark oak	86	Loblolly pine, yellow-

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
Mo---------- Morganfield	1o4	Slight	Slight	Slight	Moderate	Eastern cottonwood--	120	Eastern cottonwood, green ash, sweetgum, American sycamore, yellow-poplar.
						Green ash----------	90	
						Nuttall oak---------	100	
						Sweetgum----------	110	
						Water oak----------	105	
						Yellow-poplar-------	115	
Oa---------- Oaklimeter	1o7	Slight	Slight	Slight	Moderate	Cherrybark oak------	100	Cherrybark oak, eastern cottonwood, loblolly pine, Nuttall oak, sweetgum, water oak, yellow-poplar.
						Eastern cottonwood--	100	
						Green ash----------	90	
						Loblolly pine-------	90	
						Nuttall oak---------	100	
						Willow oak----------	100	
						Sweetgum----------	100	
OG:* Oaklimeter--------	1w8	Slight	Moderate	Moderate	Moderate	Cherrybark oak------	100	Cherrybark oak, eastern cottonwood, loblolly pine, Nuttall oak, sweetgum, water oak, yellow-poplar.
						Eastern cottonwood--	100	
						Green ash----------	90	
						Loblolly pine-------	90	
						Nuttall oak---------	100	
						Willow oak----------	100	
						Sweetgum----------	100	
Ariel----------	1w8	Slight	Moderate	Moderate	Moderate	Cherrybark oak------	110	Cherrybark oak,

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

TABLE 8.--WOODLAND UNDERSTORY VEGETATION

[Only the soils suitable for production of commercial trees are listed]

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
Ad----------	Favorable	---	Pinehill bluestem----------	30
Adler	Normal	1,500	Switchcane----------	27
	Unfavorable	---	Longleaf uniola----------	20
			Switchgrass----------	8
			Beaked panicum----------	8

TABLE 8.--WOODLAND UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
CD:*				
Daleville	Favorable	---	Pinehill bluestem	25
	Normal	1,200	Cutover muhly	17
	Unfavorable	---	Longleaf uniola	17
			Beaked panicum	9
Gb	Favorable	---	Pinehill bluestem	20
Gillsburg	Normal	1,500	Switchcane	10
	Unfavorable	---	Beaked panicum	30
			Longleaf uniola	15
GrA, GrB2	Favorable	---	Beaked panicum	30
Grenada	Normal	1,600	Longleaf uniola	20
	Unfavorable	---	Pinehill bluestem	15
			Switchcane	10
LoA, LoB2, LoC2, LoC3, LoD2, LoD3	Favorable	---	Beaked panicum	30
Loring	Normal	1,600	Pinehill bluestem	20
	Unfavorable	---	Longleaf uniola	15
			Switchcane	10
Mc	Favorable	---	Pinehill bluestem	33
McRaven	Normal	1,500	Switchcane	27
	Unfavorable	---	Longleaf uniola	20
MeA, MeB2, MeC2, MeD2, MeD3, MeF2, MeF3	Favorable	---	Beaked panicum	30
Memphis	Normal	1,600	Longleaf uniola	15
	Unfavorable	---	Switchcane	10
			Pinehill bluestem	20
Mh:*				
Memphis	Favorable	---	Beaked panicum	30
	Normal	1,600	Longleaf uniola	15
	Unfavorable	---	Switchcane	10
			Pinehill bluestem	20
Udorthents.				
Mo	Favorable	---	Pinehill bluestem	33
Morganfield	Normal	1,500	Switchcane	27
	Unfavorable	---	Longleaf uniola	20
Oa	Favorable	---	Beaked panicum	30
Oaklimeter	Normal	1,600	Pinehill bluestem	20
	Unfavorable	---	Switchcane	10
			Longleaf uniola	15
OG:*				
Oaklimeter	Favorable	---	Beaked panicum	30
	Normal	1,600	Pinehill bluestem	20
	Unfavorable	---	Switchcane	10
			Longleaf uniola	15
Ariel	Favorable	---	Beaked panicum	30
	Normal	1,600	Pinehill bluestem	20
	Unfavorable	---	Switchcane	10
			Longleaf uniola	15
Gillsburg	Favorable	---	Pinehill bluestem	20
	Normal	1,500	Switchcane	10
	Unfavorable	---	Beaked panicum	30
			Longleaf uniola	15

See footnote at end of table.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
PoA, PoB2, PoC2, PoC3---------- Providence	Favorable	---	Beaked panicum----------	30
	Normal	1,600	Pinehill bluestem----------	25
	Unfavorable	---	Longleaf uniola----------	16
			Switchcane----------	16
PrD2,* PrD3:* Providence--------	Favorable	---	Beaked panicum----------	30
	Normal	1,600	Pinehill bluestem----------	25
	Unfavorable	---	Longleaf uniola----------	16
			Switchcane----------	16
Lexington---------	Favorable	---	Beaked panicum----------	30
	Normal	1,600	Pinehill bluestem----------	25

TABLE 9.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ad Adler	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight	Moderate: flooding.
Ar Ariel	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, flooding, percs slowly.	Slight	Moderate: flooding.
Bb Bonn	Severe: wetness, percs slowly.	Severe: wetness, excess sodium, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, erodes easily.	Severe: excess sodium, wetness.
Bc:* Bruno	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: droughty, flooding.
Ariel	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, flooding, percs slowly.	Slight	Moderate: flooding.
BdA Bude	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
BrB2 Byram	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
BrC2, BrC3 Byram	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness.
BrD3 Byram	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
Ca Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
CbA, CbB Calloway	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
CC:* Cascilla	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Calhoun	Severe: flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CD:* Daleville	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Gb Gillsburg	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
GrA Grenada	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
GrB2 Grenada	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
LoA Loring	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Slight.
LoB2 Loring	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
LoC2, LoC3 Loring	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight	Slight.
LoD2, LoD3 Loring	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Mc McRaven	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
MeA Memphis	Slight	Slight	Slight	Severe: erodes easily.	Slight.
MeB2 Memphis	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
MeC2 Memphis	Slight	Slight	Severe: slope.	Severe: erodes easily.	Slight.
MeD2, MeD3 Memphis	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
MeF2, MeF3 Memphis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Mh:* Memphis	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Udorthents.					
Mo Morganfield	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
Oa Oaklimeter	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
OG:*					
Oaklimeter	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.
Ariel	Severe: flooding.	Moderate: flooding, wetness, percs slowly.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Gillsburg	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: flooding, wetness.	Severe: flooding.
Pa:*					
Pits.					
Udorthents.					
PoA Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Moderate: wetness.
PoB2 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Moderate: wetness.
PoC2, PoC3 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight	Moderate: wetness.
PrD2 * PrD3:*					

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SR:*					
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Providence	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
TpB2 Tippah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
TpC2, TpD3 Tippah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ad Adler	Good	Good	Good	Good	Fair	Good	Poor	Poor	Good	Good	Poor.
Ar Ariel	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Bb Bonn	Poor	Poor	Poor	Poor	---	---	Poor	Good	Poor	Poor	Fair.
Bc:*											
Bruno	Poor	Poor	Fair	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Ariel	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
BdA Bude	Fair	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
BrB2 Byram	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
BrC2, BrC3, BrD3 Byram	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
Ca Calhoun	Poor	Fair	Fair	Good	---	---	Good	Good	Fair	Fair	Good.
CbA Calloway	Fair	Good	Good	Good	---	---	Fair	Fair	Good	Good	Fair.
CbB Calloway	Fair	Good	Good	Good	---	---	Poor	Poor	Good	Good	Poor.
CC:*											
Cascilla	Poor	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Calhoun	Very poor.	Fair	Fair	Good	---	Good	Good	Good	Poor	Fair	Good.
CD:*											
Columbus	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Daleville	Poor	Fair	Fair	Good	Fair	Good	Good	Good	Fair	Good	Good.
Gb Gillsburg	Fair	Good	Good	Good	---	---	Fair	Fair	Good	Good	Fair.
GrA, GrB2 Grenada	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
LoA, LoB2 Loring	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoC2, LoC3, LoD2, LoD3 Loring	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Mc McRaven	Fair	Good	Good	Good	---	---	Fair	Good	Good	Good	Fair.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
MeA, MeB2---------- Memphis	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeC2, MeD2, MeD3--- Memphis	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MeF2, MeF3--------- Memphis	Very poor.	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Mh:* Memphis----------	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Udorthents.											
Mo---------- Morganfield	Good	Good	Good	Good	---	---	Poor	Very poor.	Good	Good	Very poor.
Oa---------- Oaklimeter	Good	Good	Good	Good	Poor	---	Poor	Poor	Good	Good	Poor.
OG:* Oaklimeter--------	Poor	Fair	Good	Good	Poor	---	Poor	Poor	Fair	Good	Poor.
Ariel----------	Poor	Fair	Fair	Good	Good	---	Poor	Very poor.	Fair	Good	Very poor.
Gillsburg---------	Poor	Fair	Fair	Good	---	---	Fair	Fair	Fair	Good	Fair.
Pa:* Pits.											
Udorthents.											
PoA, PoB2---------- Providence	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
PoC2, PoC3--------- Providence	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
PrD2,* PrD3:* Providence--------	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Lexington---------	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pu:* Providence--------	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Udorthents.											
Re---------- Riedtown	Good	Good	Good	Good	---	---	Poor	Poor	Good	Good	Poor.
SeB2---------- Siwell	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SeD3---------- Siwell	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SpD2,* SpD3,* SpE2:* Smithdale--------	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SpD2,* SpD3,* SpE2:* Providence	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
SR:* Smithdale	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Providence	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
TpB2 Tippah	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
TpC2, TpD3 Tippah	Fair	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 11.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Ad---------- Adler	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
Ar---------- Ariel	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
Bb---------- Bonn	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, low strength, wetness.
Bc:*					
Bruno----------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Ariel----------	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Gb---------- Gillsburg	Severe: wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
PoA, PoB2--------- Providence	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.
PoC2, PoC3-------- Providence	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.
PrD2,* PrD3:* Providence--------	Severe: wetness.	Moderate: wetness, shrink-swell	Severe: wetness.	Severe: slope.	Severe: low strength.

TABLE 12.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ad Adler	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Ar Ariel	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CD:*					
Daleville	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Gb	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
GrA	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
GrB2	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
LoA, LoB2, LoC2, LoC3	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
Loring					
LoD2, LoD3	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: slope, wetness.
Loring					
Mc	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
McRaven					
MeA	Slight	Moderate: seepage.	Slight	Slight	Good.
Memphis					
MeB2, MeC2	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
Memphis					
MeD2, MeD3	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Memphis					
MeF2, MeF3	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Memphis					
Mh:*					
Memphis	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Udorthents.					
Mo	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Morganfield					
Oa	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
Oaklimeter					
OG:*					
Oaklimeter	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
OG:*					
Ariel	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Gillsburg	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Pa:*					
Pits.					
Udorthents.					
PoA	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
PoB2, PoC2, PoC3	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
PrD2,* PrD3:*					
Providence	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Lexington	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Pu:*					
Providence	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Udorthents.					
Re	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
SeB2	Severe: wetness, percs slowly.	Moderate: slope.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
SeD3	Severe: wetness, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
SpD2,* SpD3,* SpE2:*					
Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Providence	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
SR:*					
Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SR:* Providence	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
TpB2, TpC2 Tippah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
TpD3 Tippah	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ad---------- Adler	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ar---------- Ariel	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Bb---------- Bonn	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
LoD2, LoD3---------- Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Mc---------- McRaven	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
MeA, MeB2, MeC2------- Memphis	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
MeD2, MeD3---------- Memphis	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
MeF2, MeF3---------- Memphis	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Mh:* Memphis----------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Udorthents.				
Mo---------- Morganfield	Good----------	Improbable: excess fines.	Improbable: excess fines.	Good.
Oa---------- Oaklimeter	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
OG:* Oaklimeter----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ariel----------	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Gillsburg----------	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Pa:* Pits.				
Udorthents.				
PoA, PoB2, PoC2, PoC3- Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
PrD2,* PrD3:* Providence----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Lexington----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Pu:* Providence----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
SeB2 Siwell	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
SeD3 Siwell	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope.
SpD2,* SpD3,* SpE2:* Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
SR:* Smithdale	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
TpB2, TpC2, TpD3 Tippah	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
Ad---- Adler	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Flooding----	Erodes easily, wetness.	Erodes easily.
Ar---- Ariel	Moderate: seepage.	Severe: piping.	Severe: slow refill.	Flooding----	Erodes easily, wetness.	Erodes easily.
Bb---- Bonn	Slight----	Severe: wetness, excess sodium.	Severe: no water.	Percs slowly, excess sodium.	Erodes easily, wetness, percs slowly.	Wetness, excess sodium, erodes easily.
Bc:* Bruno----	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Too sandy----	Droughty.
Ariel----	Moderate: seepage.	Severe: piping.	Severe: slow refill.	Flooding----	Erodes easily, wetness.	Erodes easily.
BdA---- Bude	Slight----	Severe: wetness.	Severe: no water.	Percs slowly---	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
BrB2, BrC2, BrC3-- Byram	Moderate: seepage.	Moderate: piping, hard to pack, wetness.	Severe: no water.	Slope----	Erodes easily, wetness.	Erodes easily, rooting depth.
BrD3---- Byram	Moderate: seepage.	Moderate: piping, hard to pack, wetness.	Severe: no water.	Slope----	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Ca---- Calhoun	Slight----	Severe: piping, wetness.	Severe: no water.	Percs slowly---	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
CbA, CbB---- Calloway	Moderate: seepage.	Severe: thin layer.	Severe: no water.	Percs slowly---	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
CC:* Cascilla----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
Calhoun----	Slight----	Severe: piping, wetness.	Severe: no water.	Percs slowly, flooding.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
CD:* Columbus----	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: cutbanks cave.	Flooding----	Erodes easily, wetness.	Erodes easily.
Daleville----	Slight----	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Gb---- Gillsburg	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Flooding----	Erodes easily, wetness.	Wetness, erodes easily.

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
PrD2,* PrD3:* Providence	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Lexington	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Pu:* Providence	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Udorthents.						
Re Riedtown	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Erodes easily, wetness.	Erodes easily.
SeB2 Siwell	Moderate: seepage.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
SeD3 Siwell	Moderate: seepage.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
SpD2,* SpD3,* SpE2:* Smithdale	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
Providence	Moderate:	Moderate:	Severe:	Slope	Slope,	Slope,

TABLE 15.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Map symbol and	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--			Liquid limit	Plas-ticity

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index.
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CD:*											
Columbus	0-5	Loam	ML, CL-ML, CL	A-4	0	100	100	90-100	70-90	<30	3-10
	5-40	Clay loam, loam, sandy clay loam.	CL, SC	A-4, A-6	0	100	90-100	80-95	40-80	22-35	8-15
	40-65	Sandy loam, loamy sand, sand.	SM, SP-SM	A-2, A-4	0	100	90-100	50-85	10-45	<20	NP-4
Daleville	0-10	Sandy loam	ML, CL-ML, SM-SC, SM	A-4	0	100	100	70-85	40-60	<30	NP-7
	10-65	Clay loam, loam, sandy clay loam.	CL	A-6	0	100	100	90-100	70-80	28-38	11-20
Gb	0-48	Silt loam	CL-ML, CL	A-4	0	100	100	100	95-100	20-28	5-10
Gillsburg	48-72	Silt loam, loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	20-38	5-16
GrA, GrB2	0-5	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	90-100	<30	NP-6
Grenada	5-22	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	100	95-100	90-100	27-40	8-19
	22-25	Silt loam	CL-ML, CL	A-4	0	100	100	95-100	90-100	20-30	5-10
	25-54	Silt loam, silty	CL, CL-ML	A-6, A-7	0	100	100	95-100	90-100	25-45	5-20

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SR:*					0-	100	85-100	60-80	36-49	<20	NP-5

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF 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]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
Ad	0-6	10-25	1.50-1.55	0.6-2.0	0.20-0.23	5.6-7.8	Low	0.43	5	---
Adler	6-60	5-18	1.50-1.55	0.6-2.0	0.20-0.23	5.6-7.8	Low	0.43		
Ar	0-32	12-18	1.40-1.50	0.6-2.0	0.20-0.22	4.5-5.5	Low	0.43	5	.5-2
Ariel	32-72	7-27	1.40-1.50	0.2-0.6	0.16-0.20	4.5-5.5	Low	0.43		
Bb	0-18	5-15	1.30-1.50	0.2-0.6	0.15-0.23	4.5-7.3	Low	0.55	1	.5-2
Bonn	18-46	18-35	1.40-1.75	<0.06	0.08-0.14	5.6-9.0	Low	0.55		
	46-72	15-35	1.40-1.75	<0.2	0.08-0.14	6.6-9.0	Low	0.55		
Bc:*										
Bruno	0-5	3-10	1.20-1.40	6.0-20	0.10-0.15	5.1-7.8	Low	0.17	5	.5-2
	5-65	2-8	1.20-1.40	6.0-20	0.05-0.10	5.1-7.8	Low	0.17		
Ariel	0-32	12-18	1.40-1.50	0.6-2.0	0.20-0.22	4.5-5.5	Low	0.43	5	.5-2
	32-72	7-27	1.40-1.50	0.2-0.6	0.16-0.20	4.5-5.5	Low	0.43		
BdA	0-23	---	---	0.6-2.0	0.18-0.23	4.5-6.0	Low	0.49	3	---
Bude	23-36	---	---	0.06-0.2	0.10-0.12	4.5-6.0	Moderate	0.43		
	36-62	---	---	0.06-0.2	0.10-0.12	4.5-6.0	Moderate	0.37		
BrB2, BrC2, BrC3, BrD3	0-5	5-12	1.35-1.45	0.6-2.0	0.20-0.23	4.5-6.0	Low	0.43	3	.5-2
Byram	5-20	20-32	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Moderate	0.43		
	20-44	20-32	1.40-1.60	0.2-0.6	0.06-0.13	4.5-6.0	Moderate	0.37		
	44-56	20-35	1.40-1.60	0.6-2.0	0.20-0.22	5.6-7.3	Moderate	0.43		
	56-72	40-80	1.40-1.55	<0.06	0.10-0.15	6.1-8.4	Very high	0.24		
Ca	0-23	10-27	1.30-1.65	0.2-0.6	0.21-0.23	4.5-6.0	Low	0.49	5	.5-4
Calhoun	23-52	10-35	1.30-1.70	0.06-0.2	0.20-0.22	4.5-5.5	Moderate	0.43		

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

							Erosion	

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm^3	In/hr	In/in	pH				Pct
PrD3:*										
Providence------	0-6	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3	.5-3
	6-22	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	22-36	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Moderate-----	0.32		

TABLE 17.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "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]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
Ad---------- Adler	C	Occasional	Brief-----	Jan-Apr	2.0-3.0	Apparent	Jan-Apr	>60	---	Moderate	Low.
Ar---------- Ariel	C	Occasional	Brief-----	Jan-Apr	2.0-3.0	Apparent	Jan-Apr	>60	---	Low------	Moderate.
Bb---------- Bonn	D	Occasional	Brief-----	Jan-Apr	0-2.0	Perched	Dec-Apr	>60	---	High-----	Low.
Bc:*											
Bruno----------	A	Occasional	Brief-----	Jan-Apr	4.0-6.0	Apparent	Dec-Apr	>60	---	Low------	Low.
Ariel----------	C	Occasional	Brief-----	Jan-Apr	2.0-3.0	Apparent	Jan-Apr	>60	---	Low------	Moderate.
BdA---------- Bude	C	None--------	---	---	0.5-1.5	Perched	Jan-Apr	>60	---	High-----	High.
BrB2, BrC2, BrC3, BrD3---------- Byram	C	None--------	---	---	1.5-2.5	Perched	Dec-Apr	>60	---	High-----	Moderate.
Ca---------- Calhoun	D	None--------	---	---	0-2.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
CbA, CbB---------- Calloway	C	None--------	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	High-----	Moderate.
CC:*											
Cascilla----------	B	Frequent----	Brief to long.	Jan-Apr	>6.0	---	---	>60	---	Low------	Moderate.
Calhoun----------	D	Frequent----	Brief to long.	Dec-Jun	0-2.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
CD:*											
Columbus----------	C	Frequent----	Brief to long.	Nov-Apr	2.0-3.0	Apparent	Dec-Apr	>60	---	High-----	High.
Daleville--------	D	Frequent----	Brief to long.	Nov-Apr	0.5-1.0	Apparent	Nov-May	>60	---	High-----	High.
Gb---------- Gillsburg	C	Occasional	Brief-----	Jan-Mar	1.0-1.5	Apparent	Jan-Apr	>60	---	High-----	High.
GrA, GrB2---------- Grenada	C	None--------	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	Moderate	Moderate.
LoA, LoB2, LoC2, LoC3, LoD2, LoD3- Loring	C	None--------	---	---	2.0-3.0	Perched	Dec-Mar	>60	---	Moderate	Moderate.
Mc---------- McRaven	C	Occasional	Brief-----	Nov-Mar	1.0-1.5	Apparent	Nov-Mar	>60	---	High-----	Moderate.
MeA, MeB2, MeC2, MeD2, MeD3, MeF2, MeF3---------- Memphis	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Mh:*											
Memphis----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Udorthents.											

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
Mo---------- Morganfield	B	Occasional	Brief-----	Jan-Apr	3.0-4.0	Apparent	Jan-Apr	>60	---	Low------	Low.
Oa---------- Oaklimeter	C	Occasional	Brief-----	Nov-Apr	1.5-2.5	Apparent	Nov-Mar	>60	---	Moderate	High.
OG:* Oaklimeter-------	C	Frequent----	Brief to very long.	Nov-Apr	1.5-2.5	Apparent	Nov-Mar	>60	---	Moderate	High.
Ariel----------	C	Frequent----	Brief to very long.	Jan-Apr	2.0-3.0	Apparent	Jan-Apr	>60	---	Low------	Moderate.
Gillsburg--------	C	Frequent----	Brief to very long.	Jan-Apr	1.0-1.5	Apparent	Jan-Apr	>60	---	High-----	High.
Pa:* Pits. Udorthents.											
PoA, PoB2, PoC2, PoC3---------- Providence	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	Moderate.
PrD2,* PrD3:* Providence-------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	Moderate.
Lexington--------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Pu:* Providence-------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	Moderate.
Udorthents.											

Station]	Clay (<0.002 mm) Pct
	21.5
	22.9
	15.2
	23.4
	15.2
	17.7
	13.5
	18.9
	23.7
	27.6
	27.6
	20.6
	19.2
	18.1
	33.6
	29.3
	17.8
	18.2
	37.0
	47.0
	12.4
	15.1
	16.9
	30.7
	27.3
	27.1
	22.7
	28.6
	26.6
	28.7
	37.1
	30.5
	31.0
	37.6
	8.6
	24.4
	22.6
	32.5
	24.4
	18.6
	17.9

TABLE 18.--PHYSICAL ANALYSES--Continued

Soil series and sample number	Horizon	Depth	Particle size distribution					Total sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
			Very coarse sand (2.0-1.0 mm)	Coarse sand (1.0-0.5 mm)	Medium sand (0.5-0.25 mm)	Fine sand (0.25-0.10 mm)	Very fine sand (0.10-0.05 mm)			
		In	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct
Gillsburg:[1]										
S80MS-089-01	Ap	0-5	0.7	0.6	0.7	2.6	2.8	7.4	83.8	8.8
	B21	5-15	0.3	0.4	0.4	0.5	1.1	2.7	86.7	10.6
	B22	15-30	1.0	1.1	0.7	0.9	0.6	4.3	81.0	14.7
	A2b	30-48	1.9	1.7	1.0	0.9	0.5	6.0	75.4	18.6
	A&B	48-60	0.6	0.9	0.7	1.4	0.8	4.4	70.9	24.7
	Btgb	60-72	0.5	0.7	0.6	1.4	0.8	4.0	70.8	25.2
Siwell:[1]										
S79MS-089-05	Ap	0-5	0.9	1.5	1.0	0.8	1.1	5.3	70.7	24.0
	B21t	5-13	0.4	0.5	0.4	0.4	0.4	2.1	64.4	33.5
	B22t	13-19	0.3	1.0	0.7	0.5	0.6	3.1	69.2	27.7
	B23t	19-26	0.2	0.7	0.6	0.5	0.4	2.4	64.9	32.7
	IIB24t	26-38	0.3	0.6	0.4	0.6	0.5	2.4	48.2	49.4
	IIC1	38-54	0.3	0.3	0.3	0.4	0.6	1.9	25.4	72.7
	IIC2	54-70	1.6	1.2	0.7	0.5	0.8	4.8	17.4	77.8

[1]Location of pedon sampled is the same given for typical pedon in "Soil series and their morphology."

[2]Calhoun silt loam: 0.5 mile south of Rice Road on Old Canton Road, 1.5 miles southeast on Reservoir Road, and 400 feet south of trailer park; SE1/4NW1/4 sec. 34, T. 7 N., R. 2 E.

[3]Calloway silt loam: 4 miles south of Canton on U.S. Highway 51, west 0.4 mile on county road, south 0.2 mile on field road, and 400 feet west of railroad; NW1/4NW1/4 sec. 15, T. 8 N., R. 2 E.

TABLE 19.--CHEMICAL ANALYSES

[Laboratory of the Mississippi Agricultural and Forestry Experiment Station]

TABLE 19.--CHEMICAL ANALYSES--Continued

Soil series and sample number	Horizon	Depth	Reaction	Extractable cations				Extractable acidity	Sum of cations	Base saturation by sum cations
				Calcium	Magnesium	Potassium	Sodium			
		In	pH	Milliequivalents per 100 grams						Percent
Siwell:[1]										
S79MS-089-05	Ap	0-5	5.3	6.7	2.8	0.2	0.3	7.5	17.5	57.1
	B21t	5-13	5.1	6.1	3.2	0.2	0.3	11.1	20.9	47.1
	B22t	13-19	5.0	4.4	2.2	0.1	0.2	9.1	16.0	43.1
	B23t	19-26	5.3	5.7	3.5	0.2	0.4	11.5	21.3	46.0
	IIB24t	26-38	5.6	16.1	8.2	0.3	1.4	8.4	34.4	75.6
	IIC1	38-54	7.6	45.0	17.3	0.4	2.3	5.3	70.3	92.5
	IIC2	54-70	7.7	46.1	18.6	0.6	2.6	1.3	69.2	98.1

[1]Location of pedon sampled is the same given for typical pedon in "Soil series and their morphology."

[2]Calhoun silt loam: 0.5 mile south of Rice Road on Old Canton Road, 1.5 miles on Reservoir Road, and 400 feet south of trailer park; SE1/4NW1/4 sec. 34, T. 7 N., R. 2 E.

[3]Calloway silt loam: 4 miles south of Canton on U.S. Highway 51, west 0.4 mile on county road, south 0.2 mile on field road, and 400 feet west of railroad; NW1/4NW1/4 sec. 15, T. 8 N., R. 2 E.

:NDEX TEST DATA

ıt Testing Division, Jackson, Mississippi]

)n				Moisture density		Shrinkage			
lge :han-		Liquid limit	Plasticity index	Max. dry density	Optimum moisture	Limit	Ratio	Volume change	Specific gravity (-) No. 10
.005 mm	.002 mm								
		Pct		Lb/ ft^3	Pct	Pct	Pct		
29	13	42	16	101.8	20.0	19	1.66	37	2.75
22	16	37	11	103.5	19.0	22	1.59	24	2.80
44	39	65	44	99.0	23.6	14	1.85	96	2.75
32	27	49	23	100.6	19.8	18	1.71	51	2.75
68	64	98	66	89.9	26.8	7	1.98	169	2.80

in "Soil series and their morphology."

TABLE 21.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Adler	Coarse-silty, mixed, nonacid, thermic Aquic Udifluvents
Ariel	Coarse-silty, mixed, thermic Fluventic Dystrochrepts
*Bonn	Fine-silty, mixed, thermic Glossic Natraqualfs
Bruno	Sandy, mixed, thermic Typic Udifluvents
Bude	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Byram	Fine-silty, mixed, thermic Typic Fragiudalfs