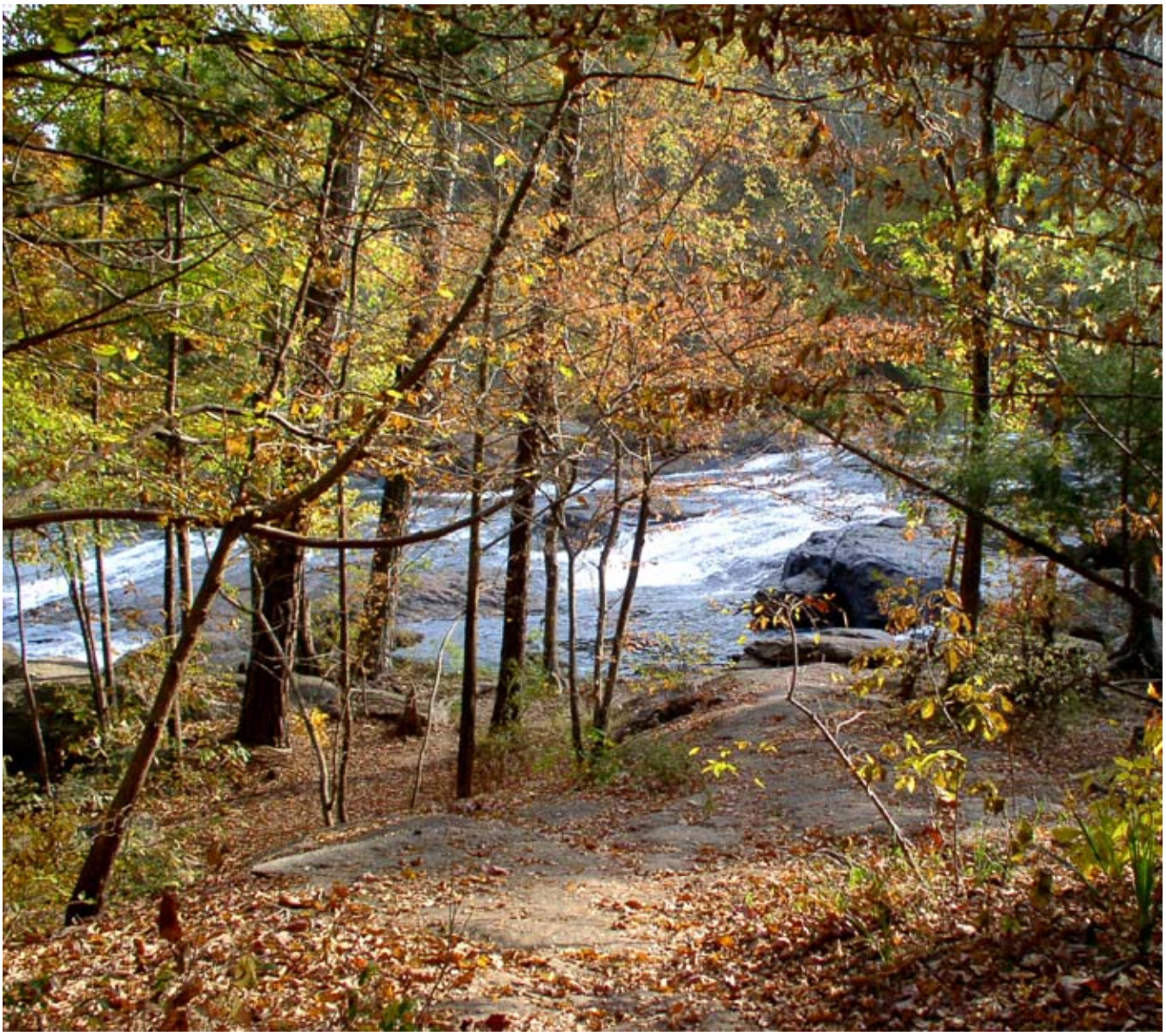
United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with University of Georgia, College of Agricultural and Environmental Sciences, Agricultural Experiment Stations

Soil Survey of Monroe County, Georgia



How To Use This Soil Survey

General Soil Map

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

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

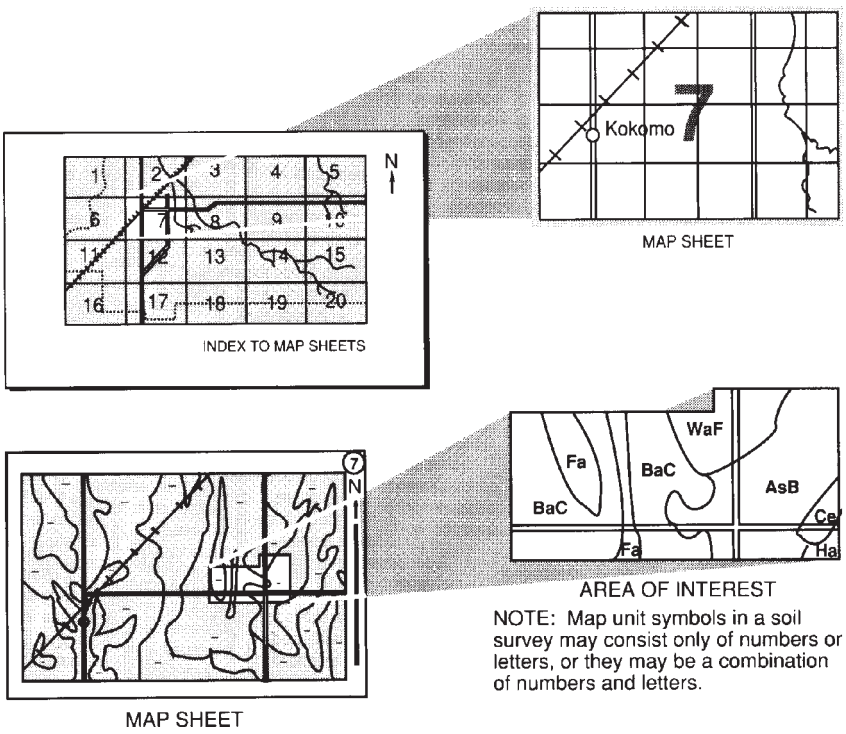
Detailed Soil Maps

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

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

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

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



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

National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service and the University of Georgia, College of Agricultural and Environmental Sciences, Agricultural Experiment Stations. The survey is part of the technical assistance furnished to the Towaliga Soil and Water Conservation District.

Major fieldwork for this soil survey was completed in 2006. Soil names and descriptions were approved in 2006. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2006. The most current official data are available on the Internet at http://websoilsurvey.nrcs.usda.gov/.

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

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Cover Caption

Mixed hardwoods in fall colors in an area of Pacolet-Saw complex along the Towaliga River at High Falls State Park. Small areas of rock outcrop exist near the edge of the river where rocky shoals serve as the riverbed.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

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Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Soil surveys are designed for many different users. Farmers, foresters, and agronomists can use the surveys 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 surveys to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the surveys to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

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

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

James E. Tillman, Sr.
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Monroe County, Georgia

By Dee C. Pederson and Sherry E. Carlson, Natural Resources Conservation Service

Fieldwork by Sherry E. Carlson, James R. Lathem, and Dee C. Pederson, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
University of Georgia, College of Agricultural and Environmental Sciences, Agricultural Experiment Stations

Monroe County is located in central Georgia (fig. 1). The total land area is 396 square miles, or 254,300 acres. The county seat is Forsyth. The topography of the county is fairly homogenous. Elevation ranges from about 650 feet above sea level to about 200 feet along the Ocmulgee River.

Monroe County is predominantly dissected by the Towaliga and Little Towaliga Rivers and the Tobesofkee, Little Tobesofkee, Echeconnee, and Rum Creeks and their tributaries. The Ocmulgee River provides a natural boundary on the eastern side of the county.

Monroe County is in the Southern Piedmont Major Land Resource Area (MLRA). Most of the soils on uplands are well drained and have a sandy loam or sandy clay loam surface and a clayey subsoil that has yellow or red colors. Soils that have thicker subsoils are usually associated with areas of the broader, gently sloping ridges or the moderately sloping hillsides. Soils that have thinner subsoils are usually associated with strongly sloping to steep hillsides. On nearly level or gently sloping river and stream terraces, soils are well drained or moderately well drained and have a sandy loam surface and a clayey subsoil. Soils on nearly level flood plains are well drained to poorly drained and are mainly loamy throughout, with the exception of the coarser levee soils.

This soil survey updates the survey of Monroe County published in 1922 (Long and others, 1922). It is a subset of the Southern Piedmont MLRA update. This soil survey provides more detailed information on map unit composition, improved interpretations, and a digital soils map with updated digital orthophotography.

General Nature of the Survey Area

This section provides general information about the survey area. It describes settlement and history, geology, water resources, agriculture, and climate.

Settlement and History

The larger land area from which Monroe County was established was originally settled by Europeans. They were attracted by the discovery of the supposed healing waters of the sulfur springs between the Ocmulgee and Towaliga rivers (Harbuck, 1957; Bryant, 1983). Because the native inhabitants were Creek Indians, the springs

Figure 1.—Location of Monroe County in Georgia.

became known as Indian Springs. Monroe County was acquired from the Creek tribe with the signing of the first Treaty of Indian Springs on January 8, 1821 (Harbuck, 1956; Krakow, 1994). This treaty ceded the land between the Ocmulgee and the Flint Rivers to the U.S. Government and was signed by the head chiefs of the Creek Nation, including General McIntosh who was a controversial chief of the Lower Creeks and the son of Captain William McIntosh, a Scotsman, and Senoya, a Creek woman (Sherwood, 1860; Bryant, 1983).

The Georgia Land Lottery Act created five counties from the ceded lands on May 15, 1821—Dooly, Fayette, Henry, Houston, and Monroe (Bryant, 1993). The Land Lottery Act opened the lands up for permanent settlement. Portions of the original Monroe County were used to create Pike County in 1822, Bibb County in 1822, Upson County in 1824, Butts County in 1825, Spalding County in 1851, and Lamar County in 1920. A portion of the original southern boundary, bordering Crawford County, and the original eastern boundary, formed naturally by the Ocmulgee River, still exist today. The present-day Monroe County boundary encompasses 396 square miles.

Monroe County was named for James Monroe, author of the Monroe Doctrine and fifth president of the United States (Sherwood, 1860). He was president when the 50th county in Georgia was created. Forsyth was installed as the county seat on February 18, 1823. Forsyth is named for the politician and diplomat John Forsyth who

served as state attorney general, governor, and United States representative and senator. On December 10, 1823, the town of Forsyth was incorporated and designated as the permanent county seat (Harbuck, 1957).

After initial establishment, the population of Monroe County increased as agricultural practices boomed. In 1850, according to the U.S. Census Bureau, the population was 16,985. The population continued to increase through the Civil War period. Monroe County experienced a severe population decrease following World War I that continued through the Great Depression of the 1930s. The 1940 Census shows the population decreased to 10,749 (CVIOG, 2008). Population rebound was slow and has only started to increase at a more rapid rate in recent decades. According to the Census, the population in 1990 was 17,113 and in 2000 there was a county population of 21,757 and a county seat population of 3,776 (CVIOG, 2008).

The Ocmulgee River was of great importance to Monroe County?s early industrial growth (Krakow, 1994). In the early 1800s, cotton was the chief agricultural commodity. The establishment of cotton gins and grist mills further increased the viability of the area. Several original communities of Monroe County are still vibrant. Indian Springs, the community that resulted from the first influx of people into the area, was located in the section of Monroe County that became part of Butts County when it was established in 1825. A portion of the Indian Springs area became an official state park in 1927 and is thought to be the oldest state park in the nation. Culloden, situated at the junction of Native American trails, was named after a Scottish Highlander who opened a store in the area in 1780 (Krakow, 1994). It was also the site of a Civil War battle in April 1865. In the early 1800s, High Falls was a prosperous industrial town with several stores, a grist mill, a cotton gin, a blacksmith shop, a shoe factory, and a hotel. High Falls became a ghost town in the 1880s when it was bypassed by a major railroad. Today, however, High Falls is home to a vibrant state park that sits on a 650-acre lake and receives many visitors each year.

Lake Juliette was formed in 1980 by damming Rum Creek. The 3,600-acre lake provides water to cool Plant Scherer, a coal-fired power plant, which opened in 1982. Water levels are maintained by pumping water in from the Ocmulgee River. An agreement between Georgia Power and the Game and Fish Division of the Georgia Department of Natural Resources provides management for the lake and surrounding uplands for recreation and wildlife management research. Lake Juliette and the Rum Creek Wildlife Management Area provide an attractive habitat for a variety of wildlife and a recreational haven for visitors to enjoy camping, boating, fishing, and hunting.

Geology

William R. Fulmer, geologist, Natural Resources Conservation Service, prepared this section.

Monroe County is in the Washington Slope District of the Piedmont Physiographic Province. This area is characterized by a gently undulating surface that descends gradually from an elevation of about 650 feet at its northern margin around the community of Blount to an elevation of about 200 feet at the southern edge of the county. Relief in the county varies from 50 to 100 feet.

The geology of Monroe County is the result of long periods of deformation, igneous intrusion, and metamorphism. The relatively unweathered igneous and metamorphic rocks are overlain by a layer of noncemented material that consists of surface soils overlying weathered rock or saprolite. Saprolite is formed from the in-place weathering of rock and may contain much of the structure of the original parent rock.

The Towaliga Fault forms a cataclastic zone that crosses the northwest corner of Monroe County. The Goat Rock Fault is represented by a zone of cataclastic rock that crosses southeastern Monroe County.

High Falls Granite, which is a coarse-grained biotite granite, provides the parent material for soils above the Towaliga Fault. An interlayered mica schist and biotite gneiss unit provides parent materials for soils south of the Towaliga Fault. Pegmatite dikes, consisting of coarse quartz, feldspar, muscovite and biotite, also occur within this formation. Weathering of these rocks produces a light gray to nearly red saprolite soil material.

East of Forsyth, this gneiss-schist unit transitions into an intrusive rock complex that consists of gneiss and mafic rocks, including amphibolite (hornblende) and minor pyroxene and quartz diorite. This area is centered near the confluence of the Towaliga and Ocmulgee Rivers. Yellow to brownish red to red colors are typical of soils produced by the weathering of these rock types.

South of the Goat Rock Fault, the rock type is essentially biotite gneiss and minor amounts of granite gneiss and amphibolite gneiss. Tan red to red soil residuum are common in the area underlain by these rock types.

The Goat Rock Fault is a southeast-dipping zone of movement that extends across Monroe County and into Jones County where the course of the fault becomes less defined. Typically, the fault is marked by a bed of sheared rocks called mylonite, which formed from broken fragments of biotite gneiss, amphibolite gneiss, and granite gneiss. The Towaliga Fault dips steeply to the northwest and extends through Monroe County and into Jasper County some distance away. This zone is somewhat narrow and exposure is poor, but it is marked by the presence of mylonites and flinty crushed rocks. Brecciated rocks, consisting of small angular rock fragments, may occur on both sides of the fault zone.

Water Resources

Lester J. Williams, U.S. Geological Survey, prepared this section.

The water supply in Monroe County is derived from both surface and groundwater sources. Outside of Forsyth, water is derived mainly from groundwater sources, although springs, small creeks, farm ponds, and larger streams are a major source of water for cattle and other livestock. In 2000, water use in the county was estimated at 7.3 million gallons per day; 23 percent was used for public supply, 17 percent for domestic and commercial supply, and 58 percent for livestock (Fanning, 2001).

Surface water sources are heavily depended upon for public supplies. Forsyth draws most of its water from intakes located on Tobesofkee Creek and Rocky Creek. A small amount of surface water is also purchased from the Butts County Water and Sewer Authority and the Macon-Bibb County Water and Sewagerage Authority. In 2000, public supplies derived from surface water sources totaled 1.54 million gallons per day (Fanning, 2001).

Surface water from Lake Juliette is used to supply water to cool Plant Scherer, a large electric power generation plant located near Forsyth. Surface water is pumped from an intake located on the Ocmulgee River into Lake Juliette, a 3,600-acre lake. In 2000, an average of 118 million gallons per day was pumped from the intake on the Ocmulgee River into Lake Juliette for power generation purposes. Pumping is done only when the river is high enough to keep users downstream from being affected.

Groundwater sources are used in areas outside the larger surface water systems. The largest groundwater use is for livestock, followed by domestic use, public supply, and irrigation. In 2000, groundwater sources accounted for an estimated 3.46 million gallons per day, or approximately half of the water supply used in the county. Many parks, campgrounds, and small subdivisions still depend on wells for their water supply. The type, depth, and yield of wells vary depending on the depth to the water table and the geology of the area.

In most parts of the county, shallow bored, or dug, wells can be depended upon to furnish water for small domestic and rural uses. These wells range in depth from 30 to

60 feet and are open to and derive water from unconsolidated material, consisting of soil, alluvium, saprolite, and weathered rock overlying unweathered bedrock. Drought conditions frequently cause bored or dug wells to ?go dry? when the water table dips below the bottom of the well. The only solution to this problem is to deepen the well or to use a deeper drilled well.

Drilled wells are widely used in the survey area and are open to and derive water from deep fractures, voids, and other openings in the underlying bedrock. This type of well is constructed with a surface casing to seal off shallow zones and is drilled deep enough into the bedrock to penetrate at least one water-bearing fracture zone that supplies water to the well. According to records maintained by the U.S. Geological Survey, drilled wells in Monroe County range in depth from 91 to 705 feet and have an average depth of about 450 feet. Surface casings in these wells range from 12 to 135 feet and average 43 feet. Well yields range from 3 to 136 gallons per minute and average 56 gallons per minute. Most drilled wells are capable of furnishing water of suitable quality and quantity for small domestic and rural uses. Larger quantities of water, however, are available only in areas that have increased bedrock permeability, usually in association with lithologic contacts, fault zones, and zones of fracture concentration. It is a common practice to drill multiple wells or to use geologic mapping to obtain larger quantities of ground water where needed.

Agriculture

Carmen Westerfield, district conservationist, Natural Resources Conservation Service, prepared this section.

Monroe County was once dominated by virgin forests. As settlement progressed, some of the forestlands were cleared for cultivation. The most commonly cultivated crops grown by the early settlers were corn, small grains, and cotton. Cotton became the main cash crop; corn and small grains were grown primarily as food for livestock and draft animals. The land was farmed intensely during this time with little regard for conservation.

The economic depression in the early 1930s marked the climax of man?s misuse of the land. At this same time, the cotton crop was nearly destroyed by the boll weevil, which resulted in a loss of what had been the main income source of farmers for several decades. The intensive farming and the lack of conservation practices made soil erosion and low soil fertility major concerns for the farming community. In 1937, an enactment of legislation by the state of Georgia established soil conservation districts. This legislation was supported by leading farmers in Monroe County. Farmers in the county began using terraces, grassed waterways, improved pastures, and ponds to control erosion and increase soil productivity. They used the soil according to its capability and treated it in accordance with the needs of each crop. Many sloping, seriously eroded fields that had been used for row crops were converted to grassland for pastures or were converted to forestland.

Due to the loss of their main cash crop and the implementation of conservation practices, many farmers made the switch from row crops to small dairy operations. By 1945, there were approximately 260 small dairies in Monroe County, which made up a significant portion of the farming community. The number of dairy farms has slowly declined over time. In the early 1990s, there were 15 dairies across the county; today it has dwindled to three. Many of these dairy farmers traded their dairy cows for beef cattle and converted land previously used for growing corn or forage crops to grassland for grazing.

Today, there are approximately 25,000 acres of pasture in Monroe County. Beef cattle number around 8,500 head and cattle operations vary in size and type, including commercial beef cattle operations, purebred operations, and several stocker operations. Beef is not the only commodity that has been on the rise in recent years.

There has been a steady increase in the number of poultry operations since the early 1990s as well. Today there are 90 broiler houses in Monroe County. The rise in beef cattle and poultry operations has left only two farms in the county that grow row crops. These farms continue to grow the same crops that began in Monroe County, primarily corn, small grains, and cotton.

Since 1937, forestland acres have continued to increase due to the conversion of farmland to woodland. Growing timber dramatically reduces the frequency of management activities that disturb the soil, which lessens the potential for erosion and allows the soil to begin to recover important nutrients. Currently, there are approximately 194,300 acres of woodland in Monroe County. This includes natural forestlands as well as planted pine stands.

Climate

Prepared by the Natural Resources Conservation Center, National Water and Climate Center, Portland, Oregon.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Forsyth, Georgia, in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from the First Order station in Macon, Georgia.

In winter, the average temperature is 46.4 degrees F and the average daily minimum temperature is 33.4 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -5 degrees. In summer, the average temperature is 78.1 degrees and the average daily maximum temperature is 90.2 degrees. The highest recorded temperature, which occurred on July 20, 1986, is 104 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 46.56 inches. Of this, 24.53 inches, or 53 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 6.50 inches on July 24, 1971. Thunderstorms occur on about 55 days each year, and most occur between May and August.

The average seasonal snowfall is about 0.9 inches. The greatest snow depth at any one time during the period of record was 10 inches on February 10, 1973. On the average, less than one day each year has at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 6.0 inches on January 19, 1992.

The average relative humidity in midafternoon is about 52 percent. Humidity is higher at night, and the average at dawn is about 75 percent. The sun shines 70 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the west-northwest, except from August to September when it is from the northeast. Average windspeed is highest, around 9 miles per hour, in February and March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length,

and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

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

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

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

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

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over

long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

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

General Soil Map Units

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

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

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or 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.

1. Chewacla-Buncombe

Predominantly nearly level, well drained to somewhat poorly drained soils that have a loamy surface and sandy and loamy underlying material; on flood plains

Setting

Landform: Flood plains
Predominant slope range: 0 to 2 percent
Flooding: Frequently flooded
Hydrologic features: Sloughs, depressions, and beaver ponds occur throughout the unit

Extent and Composition

Percent of county: 1 percent
Chewacla soils: 50 percent
Buncombe soils: 10 percent
Minor soils: 40 percent
General location: Chewacla—the slightly lower parts of the flood plain; Buncombe—the slightly higher parts of the flood plain on natural levees adjacent to stream channels

Soil Characteristics

Chewacla
Surface layer: Dark brown loam
Subsoil: Upper part—brown clay loam; next part—brown clay loam that has brown iron depletions; lower part—dark grayish brown clay loam that has yellowish red masses of oxidized iron
Substratum: Upper part—dark gray sandy clay loam; lower part—gray sandy clay loam that has pockets of sandy clay

Buncombe
Surface layer: Dark yellowish brown loamy sand
Underlying material: Upper part—yellowish brown sand; next part—yellowish brown sand that has brownish yellow mottles; lower part—dark yellowish brown loamy sand that has brownish yellow mottles

Minor soils
- Wehadkee soils in depressions, backswamps, and sloughs of the flood plain
- Toccoa and Riverview soils on the higher parts of the flood plain
- Hiwassee and Whistlestop soils on adjacent terraces
- Madison, Lloyd, Cecil, and Pacolet soils on adjacent backslopes of hills

Use and Management

Major land use: Woodland and wetland wildlife habitat

Field crops, hayland, and pasture
Management concerns: Seasonal flooding and wetness

Woodland
Management concerns: Seasonal flooding and wetness

Urban development
Management concerns: Seasonal flooding and wetness

Recreational development
Management concerns: Seasonal flooding and wetness

2. Cecil-Madison-Lloyd

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

Setting

Landform: Hills
Predominant slope range: 2 to 10 percent
Hydrologic features: Few intermittent drainageways

Extent and Composition

Percent of county: 15 percent
Cecil soils: 60 percent
Madison soils: 10 percent
Lloyd soils: 10 percent
Minor soils: 20 percent
General location: Summits and backslopes

Soil Characteristics

Cecil
Surface layer: Dark brown sandy clay loam
Subsoil: Upper part—yellowish red sandy clay; next part—red clay; next part—red sandy clay; lower part—red sandy clay
Substratum: Red sandy clay loam

Madison
Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red sandy clay; next part—red clay loam; lower part—red loam
Substratum: Yellowish red sandy loam

Lloyd
Surface layer: Dark reddish brown sandy clay loam
Subsoil: Upper part—dark red clay; next part—dark reddish brown clay; next part—red sandy clay loam; lower part—yellowish red sandy clay loam

Minor soils
- Urban land in developed areas
- Chewacla and Wehadkee soils on adjacent flood plains
- Random areas of Cataula, Hard Labor, and Sedgefield soils on the lower or more concave parts of the landscape

Use and Management

Major land use: Mainly woodland and pasture; some cropland

Field crops, hayland, and pasture
Management concerns: Erosion in unprotected areas

Woodland
Management concerns: No significant limitations

Urban development
Management concerns: Moderate permeability in the subsoil, which affects septic tank absorption fields

Recreational development
Management concerns: Erosion in unprotected areas

3. Cecil-Cataula-Hard Labor

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

Setting

Landform: Hills
Predominant slope range: 2 to 10 percent
Hydrologic features: Few intermittent drainageways

Extent and Composition

Percent of county: 3 percent
Cecil soils: 45 percent
Cataula soils: 20 percent
Hard Labor: 10 percent
Minor soils: 25 percent
General location: Cecil—gently sloping or moderately sloping summits and backslopes; Cataula and Hard Labor—gently sloping or moderately sloping backslopes and footslopes

Soil Characteristics

Cecil
Surface layer: Dark brown sandy clay loam
Subsoil: Upper part—yellowish red sandy clay; next part—red clay; next part—red sandy clay; lower part—red sandy clay
Substratum: Red sandy clay loam

Cataula
Surface layer: Dark yellowish brown sandy loam
Subsurface layer: Yellowish brown sandy loam

Subsoil: Upper part—red clay; next part—red clay that has pale brown iron depletions and brownish yellow masses of oxidized iron; next part—red clay that has light brownish gray and pale brown iron depletions and brownish yellow masses of oxidized iron; lower part—red and brownish yellow sandy clay that has light brownish gray iron depletions
Substratum: Red sandy clay loam

Hard Labor
Surface layer: Dark brown sandy loam
Subsurface layer: Yellowish brown sandy clay loam
Subsoil: Upper part—yellowish brown sandy clay; next part—yellowish brown clay that has red masses of oxidized iron; next part—yellowish brown and red sandy clay that has light brownish gray iron depletions; lower part—yellowish brown and red sandy clay that has very pale brown iron depletions

Minor soils
- Sedgefield soils on footslopes and toeslopes
- Bush River and Prosperity soils on the higher parts of backslope areas
- Chewacla and Wehadkee soils on adjacent flood plains
- Random areas of Lloyd, Madison, and Pacolet soils

Use and Management

Major land use: Mainly woodland and pasture; some cropland

Field crops, hayland, and pasture
Management concerns: Erosion in unprotected areas

Woodland
Management concerns: No significant limitations

Urban development
Management concerns: Seasonal wetness and slow permeability in the subsoil, which severely limit the use of this soil for septic tank absorption fields

Recreational development
Management concerns: Erosion in unprotected areas

4. Madison-Lloyd-Cecil

Predominantly moderately sloping to steep, well drained soils that have a loamy surface and a clayey subsoil; on uplands

Setting

Landform: Hills
Predominant slope range: 10 to 30 percent
Hydrologic features: Intermittent drainageways and perennial streams

Extent and Composition

Percent of county: 41 percent
Madison soils: 30 percent
Lloyd soils: 30 percent
Cecil soils: 15 percent
Minor soils: 25 percent
General location: Madison and Lloyd—moderately sloping to steep shoulders and backslopes; Cecil—moderately sloping summits and backslopes

Soil Characteristics

Madison
Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red sandy clay; next part—red clay loam; lower part—red loam
Substratum: Yellowish red sandy loam

Lloyd
Surface layer: Dark reddish brown sandy clay loam
Subsoil: Upper part—dark red clay; next part—dark reddish brown clay; next part—red sandy clay loam; lower part—yellowish red sandy clay loam

Cecil
Surface layer: Dark brown sandy clay loam
Subsoil: Upper part—yellowish red sandy clay; next part—red clay; next part—red sandy clay; lower part—red sandy clay
Substratum: Red sandy clay loam

Minor soils
- Chewacla and Toccoa soils on adjacent flood plains
- Cataula, Bush River, and Prosperity soils on the lower backslopes and toeslopes
- Pacolet, Saw, and Bethlehem soils in similar landscape positions

Use and Management

Major land use: Mainly woodland and pasture

Field crops, hayland, and pasture
Management concerns: Erosion in unprotected areas, slope, and surface stones

Woodland
Management concerns: Erosion in unprotected areas; moderately steep slopes, which limit the use of heavy equipment; and windthrow in areas of the Saw soil, resulting from the depth to hard bedrock

Urban development
Management concerns: Slope; moderate permeability in the subsoil, which affects septic tank absorption fields; depth to hard bedrock in areas of the Saw soil; and erosion in unprotected areas

Recreational development
Management concerns: Erosion in unprotected areas and slope

5. Madison-Wynott-Lloyd

Predominantly strongly sloping to steep, well drained soils that have a loamy surface and a clayey subsoil; on uplands

Setting

Landform: Hills
Predominant slope range: 15 to 30 percent
Hydrologic features: Intermittent drainageways and perennial streams

Extent and Composition

Percent of county: 17 percent
Madison soils: 40 percent
Wynott soils: 10 percent
Lloyd soils: 10 percent

Minor soils: 40 percent
General location: Shoulders and backslopes

Soil Characteristics

Madison
Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red sandy clay; next part—red clay loam; lower part—red loam
Substratum: Yellowish red sandy loam

Wynott
Surface layer: Dark grayish brown sandy loam
Subsurface layer: Brown sandy loam
Subsoil: Upper part—dark yellowish brown clay; lower part—dark yellowish brown sandy clay that has brown mottles
Substratum: Upper part—multicolored yellowish brown, pale brown, and black sandy loam; lower part—weathered bedrock

Lloyd
Surface layer: Dark reddish brown sandy clay loam
Subsoil: Upper part—dark red clay; next part—dark reddish brown clay; next part—red sandy clay loam; lower part—yellowish red sandy clay loam

Minor soils
- Chewacla and Toccoa soils on adjacent flood plains
- Random areas of Cecil and Pacolet soils on gently sloping summits and upper backslopes
- Wilkes and Winnsboro soils on steeply sloping shoulders and backslopes
- Cataula, Bush River, and Prosperity soils on lower backslopes and toeslopes
- Saw and Bethlehem soils in similar landscape positions

Use and Management

Major land use: Mainly woodland and pasture

Field crops, hayland, and pasture
Management concerns: Erosion in unprotected areas, slope, and surface stones

Woodland
Management concerns: Erosion in unprotected areas; moderately steep slopes, which limit the use of heavy equipment; and windthrow in areas of the Saw and Wilkes soils, resulting from the depth to hard bedrock

Urban development
Management concerns: Slope; moderate permeability in the subsoil, which affects septic tank absorption fields; depth to hard bedrock in areas of the Saw and Wilkes soils; and erosion in unprotected areas

Recreational development
Management concerns: Erosion in unprotected areas and slope

6. Cecil-Madison-Pacolet

Predominantly moderately sloping to steep, well drained soils that have a loamy surface and a clayey subsoil; on uplands

Setting

Landform: Hills
Predominant slope range: 15 to 30 percent

Hydrologic features: Intermittent drainageways and perennial streams

Extent and Composition

Percent of county: 23 percent
Cecil soils: 35 percent
Madison soils: 30 percent
Pacolet soils: 10 percent
Minor soils: 25 percent
General location: Cecil—moderately sloping summits and backslopes; Madison and Pacolet—moderately sloping to steep shoulders and backslopes

Soil Characteristics

Cecil
Surface layer: Dark brown sandy clay loam
Subsoil: Upper part—yellowish red sandy clay; next part—red clay; next part—red sandy clay; lower part—red sandy clay
Substratum: Red sandy clay loam

Madison
Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red sandy clay; next part—red clay loam; lower part—red loam
Substratum: Yellowish red sandy loam

Pacolet
Surface layer: Yellowish red sandy clay loam
Subsoil: Upper part—red clay; next part—red sandy clay that has yellowish red mottles; lower part—yellowish red sandy clay loam that has reddish yellow mottles
Substratum: Yellowish red, pink, and red sandy loam

Minor soils
- Chewacla, Toccoa, and Wehadkee soils on adjacent flood plains
- Random areas of Lloyd, Saw, and Bethlehem soils
- Wilkes and Wynott soils on steeply sloping shoulders and backslopes
- Cataula, Bush River, and Prosperity soils on lower backslopes and toeslopes

Use and Management

Major land use: Mainly woodland and pasture

Field crops, hayland, and pasture
Management concerns: Erosion in unprotected areas, slope, and surface stones

Woodland
Management concerns: Erosion in unprotected areas; moderately steep slopes, which limit the use of heavy equipment; and windthrow in areas of the Saw and Wilkes soils, resulting from the depth to hard bedrock

Urban development
Management concerns: Slope; moderate permeability in the subsoil, which affects septic tank absorption fields; depth to hard bedrock in areas of the Saw and Wilkes soils; and erosion in unprotected areas

Recreational development
Management concerns: Erosion in unprotected areas and slope

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. The soils of a given series can differ in texture of the surface layer, slope, stoniness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil

phase commonly indicates a feature that affects use or management. For example, Madison sandy clay loam, 6 to 15 percent slopes, is a phase of the Madison series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Bush River-Prosperity complex, 6 to 15 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarry, is an example.

Table 4 lists the map units in this survey area. Other 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.

AwE—Ashlar-Wake complex, 15 to 25 percent slopes

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep
Slope shape: Mainly convex

Composition

Ashlar and similar soils—60 percent
Wake and similar soils—20 percent
Dissimilar soils—20 percent

Typical Profile

Ashlar
Surface layer:
0 to 7 inches—yellowish brown coarse sandy loam

Subsoil:
7 to 15 inches—brownish yellow coarse sandy loam

Substratum:
15 to 25 inches—brownish yellow loamy coarse sand saprolite

Bedrock:
25 inches—hard, unweathered bedrock

Wake
Surface layer:
0 to 4 inches—dark brown loamy sand

Substratum:
4 to 14 inches—brown loamy sand saprolite

Bedrock:
14 inches—hard, unweathered bedrock

Soil Properties and Qualities

Ashlar
Agricultural drainage class: Excessively drained
Natural fertility: Low
Surface layer organic matter: Low

Permeability: Moderately rapid
Available water capacity: Very low or low
Flooding: None
Tilth: Good
Root zone: Moderately deep

Wake
Agricultural drainage class: Excessively drained
Natural fertility: Low
Surface layer organic matter: Low
Permeability: Rapid
Available water capacity: Very low
Flooding: None
Tilth: Good
Root zone: Shallow

Dissimilar Components

- Random areas of Saw soils
- Random areas of very deep soils that have a fine-loamy subsoil
- A few small areas of soils that have extremely stony surfaces and are located on shoulders

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: Ashlar—6e; Wake—6s
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas; slope; and depth to bedrock, which limits the root zone
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Ashlar—moderate for loblolly pine; Wake—low for loblolly pine
Management concerns: Erosion in unprotected areas; moderately steep slopes, which limit the use of heavy equipment; windthrow, resulting from the depth to hard bedrock; and seedling mortality, resulting from the droughty nature of the soil
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Ashlar—poorly suited; Wake—unsuited
Limitations: Slope, depth to hard bedrock, and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations in the Ashlar soil.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited

Limitations: Erosion in unprotected areas, slope, and depth to hard bedrock
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

BcB—Buncombe loamy sand, 0 to 6 percent slopes, occasionally flooded

Setting

Landform: Stream levees
Slope: Nearly level or gently sloping
Slope shape: Linear to convex

Composition

Buncombe and similar soils—80 percent
Dissimilar soils—20 percent

Typical Profile

Surface layer:
0 to 10 inches—dark yellowish brown loamy sand

Underlying material:
10 to 35 inches—yellowish brown sand
35 to 55 inches—yellowish brown sand that has brownish yellow mottles
55 to 60 inches—dark yellowish brown loamy sand that has brownish yellow mottles

Soil Properties and Qualities

Agricultural drainage class: Excessively drained
Natural fertility: Low
Surface layer organic matter: Low
Permeability: Rapid
Available water capacity: Low
Flooding: Occasional
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Chewacla soils located on the lower parts of the flood plain
- Random areas of Toccoa soils
- A few areas of soils that have a seasonal high water table at a depth of 3.5 to 5.0 feet and are located on the lower part of flood plain levees

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 4w
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Moderately suited
Management concerns: Flooding and low available water capacity
Suitable management practices:
- Irrigation can improve production of pasture and hay crops.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: Seasonal flooding, which limits the use of heavy equipment, and seedling mortality, resulting from the droughty nature of the soil
Suitable management practices:
- Hand planting reduces the need for heavy machinery.

Urban development
Suitability: Unsuited
Limitations: Flooding and poor filtering, which may affect septic tank absorption fields

Recreational development
Suitability: Moderately suited
Limitations: Flooding and sandiness
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

BpD—Bush River-Prosperity complex, 6 to 15 percent slopes

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Convex

Composition

Bush River and similar soils—45 percent
Prosperity and similar soils—29 percent
Dissimilar soils—26 percent

Typical Profile

Bush River
Surface layer:
0 to 5 inches—brown sandy loam

Subsoil:
5 to 16 inches—yellowish red clay that has red and yellow masses of oxidized iron
16 to 25 inches—strong brown sandy clay that has light olive brown iron depletions and strong brown masses of oxidized iron
25 to 31 inches—yellowish brown sandy clay that has light gray iron depletions and yellowish red masses of oxidized iron
31 to 40 inches—yellowish brown sandy clay that has white and light brownish gray iron depletions and red and strong brown masses of oxidized iron

Substratum:
40 to 48 inches—yellowish brown sandy loam saprolite that has light brownish gray masses of clay
48 to 60 inches—soft, highly weathered bedrock

Prosperity
Surface layer:
0 to 3 inches—dark yellowish brown sandy loam

Subsurface layer:
3 to 6 inches—yellowish brown sandy loam

Subsoil:
6 to 15 inches—yellowish red sandy clay that has light reddish brown iron depletions and red masses of oxidized iron
15 to 25 inches—strong brown sandy clay that has light reddish brown iron depletions and red masses of oxidized iron
25 to 35 inches—yellowish brown sandy clay that has gray and light gray iron depletions and yellowish red masses of oxidized iron

Substratum:
35 to 60 inches—weathered, highly fractured bedrock

Soil Properties and Qualities

Bush River
Agricultural drainage class: Moderately well drained
Seasonal high water table: Perched, at a depth of 1.5 to 2.5 feet from December through March
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Deep

Prosperity
Agricultural drainage class: Moderately well drained
Seasonal high water table: Perched, at a depth of 1.5 to 2.5 feet from December through March
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Low
Flooding: None
Tilth: Good
Root zone: Moderately deep

Dissimilar Components

- Madison and Wynott soils located on the upper parts of the landscape
- Random areas of moderately well drained and well drained soils that have bedrock at a depth of more than 60 inches

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 4e
Suitability: Moderately suited
Management concerns: Erosion in unprotected areas and seasonal wetness
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine, shortleaf pine, and hardwoods
Management concerns: Depth to water table and erosion in unprotected areas
Suitable management practices:
- Because of wetness, logging operations should be scheduled during dry seasons.
- Erosion can be minimized by the use of harvesting methods that least disturb the soil, such as placing skid trails, log landings, and temporary logging roads on adequate grades that do not lead to drainageways.

Urban development
Suitability: Poorly suited
Limitations: Seasonal wetness, which limits building site development; slow permeability in the subsoil; high shrink-swell potential; and wetness, which may affect septic tank absorption fields
Suitable management practices:
- Because of the severe limitations of this soil, an alternate building site should be selected.

Recreational development
Suitability: Moderately suited
Limitations: Seasonal wetness, slow permeability, and high shrink-swell potential
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.

CaB—Cataula sandy loam, 2 to 6 percent slopes

Setting

Landform: Hills
Hillslope profile position: Backslopes and footslopes
Slope: Gently sloping
Slope shape: Slightly concave or linear

Composition

Cataula and similar soils—85 percent
Dissimilar soils—15 percent

Typical Profile

Surface layer:
0 to 4 inches—dark yellowish brown sandy loam

Subsurface layer:
4 to 7 inches—yellowish brown sandy loam

Subsoil:
7 to 23 inches—red clay
23 to 30 inches—red clay that has pale brown iron depletions and brownish yellow masses of oxidized iron
30 to 40 inches—red clay that has light brownish gray and pale brown iron depletions and brownish yellow masses of oxidized iron
40 to 52 inches—red and brownish yellow sandy clay that has light brownish gray iron depletions

Substratum:
52 to 60 inches—red sandy clay loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Moderately well drained
Seasonal high water table: Perched, at a depth of 2.5 to 3.3 feet from December through April
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep; the root zone may be somewhat limited by the soil horizons that have platy structures

Dissimilar Components

- Cecil and Madison soils located on the higher or the more convex parts of the landscape
- Random areas of soils that have a seasonal high water table at a depth of 3.5 to 5.0 feet

Use and Management

Land use: Mainly pasture; some cropland and woodland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited (fig. 2)

Figure 2.—Cotton growing in an area of Cataula sandy loam, 2 to 6 percent slopes. This is one of the few fields of cotton in Monroe County. This field has been protected from erosion from row-cropping by the application of good conservation practices, such as conservation tillage.

Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Poorly suited
Limitations: Seasonal wetness, which limits building site development, and slow permeability in the subsoil and wetness, which may affect septic tank absorption fields
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Moderately suited
Limitations: Seasonal wetness
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.

CdB—Cecil sandy loam, 2 to 6 percent slopes

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Cecil and similar soils—85 percent
Dissimilar soils—15 percent

Typical Profile

Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 11 inches—reddish brown sandy clay loam
11 to 24 inches—red sandy clay
24 to 37 inches—red sandy clay that has reddish yellow mottles
37 to 48 inches—red sandy clay loam that has reddish yellow mottles

Substratum:
48 to 60 inches—red and reddish yellow sandy clay loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate

Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Bethlehem soils located on summits and shoulders
- Random areas of soils that have a loamy subsoil, have occasional, very brief flooding, and are located in swales

Use and Management

Land use: Mainly pasture and cropland; some woodland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

CeC2—Cecil sandy loam, 6 to 10 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Moderately sloping
Slope shape: Convex

Composition

Cecil and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 5 inches—yellowish red sandy loam

Subsoil:
5 to 8 inches—red sandy clay loam
8 to 40 inches—red clay
40 to 52 inches—red sandy clay loam

Substratum:
52 to 60 inches—yellowish red sandy loam

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Cataula and Hard Labor soils located on the lower or the more concave parts of the landscape
- Random areas of Saw soils located on summits and shoulders
- Random areas of soils that have a dark red subsoil, have soft bedrock at a depth of 40 to 60 inches, and are located on summits and shoulders

Use and Management

Land use: Mainly pasture and cropland; some woodland

Field crops, hay, and pasture
Land capability classification: 3e
Suitability: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

CfB2—Cecil sandy clay loam, 2 to 6 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Cecil and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 6 inches—yellowish red sandy clay loam

Subsoil:
6 to 52 inches—red sandy clay

Substratum:
52 to 60 inches—red sandy clay loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape

Use and Management

Land use: Mainly pasture and cropland; some woodland

Field crops, hay, and pasture
Land capability classification: 3e
Suitability for field crops: Moderately suited
Suitability for hay and pasture: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.

Woodland
Productivity: Moderate for loblolly pine

Management concerns: Equipment use limitations and erosion in unprotected areas
Suitable management practices:
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

CgC3—Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Moderately sloping
Slope shape: Convex

Composition

Cecil and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 4 inches—dark brown sandy clay loam

Subsoil:
4 to 7 inches—dark reddish brown sandy clay
7 to 15 inches—yellowish red sandy clay
15 to 29 inches—red clay
29 to 43 inches—red sandy clay
43 to 50 inches—red sandy clay loam

Substratum:
50 to 60 inches—red sandy clay loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep

Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Bethlehem soils located on summits and shoulders

Use and Management

Land use: Mainly pasture and woodland

Field crops, hay, and pasture
Land capability classification: 4e
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas (fig. 3)
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and erosion in unprotected areas

Figure 3.—Hayland in an area of Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded. Well established and well maintained hayland will help protect this pasture from further erosion.

Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

CuC—Cecil-Urban land complex, 2 to 10 percent slopes

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping or moderately sloping
Slope shape: Convex
Landscape features: Soils in this unit have been altered by cutting, filling, and shaping. Schools, parking lots, streets, commercial buildings, and residential dwellings are features of the landscape.

Composition

Cecil and similar soils—65 percent
Urban land—30 percent
Dissimilar soils—5 percent

Typical Profile

Cecil
Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 11 inches—reddish brown sandy clay loam
11 to 24 inches—red sandy clay
24 to 37 inches—red sandy clay that has reddish yellow mottles
37 to 48 inches—red sandy clay loam that has reddish yellow mottles

Substratum:
48 to 60 inches—red and reddish yellow sandy clay loam saprolite

Urban land
Urban land consists of areas that have been altered by cutting, filling, and shaping. Schools, parking lots, streets, commercial buildings, and residential dwellings are located in these areas.

Soil Properties and Qualities

Cecil
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components to Cecil

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Bethlehem soils located on summits and shoulders

Use and Management

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

CwA—Chewacla loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains
Slope: Nearly level
Slope shape: Slightly concave or linear

Composition

Chewacla and similar soils—90 percent
Dissimilar soils—10 percent

Typical Profile

Surface layer:
0 to 6 inches—dark brown loam

Subsoil:
6 to 14 inches—brown clay loam
14 to 25 inches—brown clay loam that has brown iron depletions
25 to 30 inches—dark grayish brown clay loam that has yellowish red masses of oxidized iron

Substratum:
30 to 40 inches—dark gray sandy clay loam
40 to 60 inches—gray sandy clay loam that has pockets of sandy clay

Soil Properties and Qualities

Agricultural drainage class: Somewhat poorly drained
Seasonal high water table: Apparent, at a depth of 0.5 to 2.0 feet from December through April
Natural fertility: Medium
Surface layer organic matter: Moderate or moderately low
Permeability: Moderate
Available water capacity: High
Flooding: Frequent
Tilth: Good
Root zone: Very deep, except from early winter to mid-spring when the seasonal high water table is at a depth of 0.5 to 2.0 feet or when the soil is flooded

Dissimilar Components

- Buncombe soils located on the adjacent natural levees
- Toccoa soils located on the higher parts of the flood plain
- Wehadkee soils located in depressions and backswamp areas

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 4w
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Moderately suited
Management concerns: Seasonal wetness and flooding (fig. 4)

Figure 4.—Corn growing in an area of Chewacla loam, 0 to 2 percent slopes, frequently flooded. Flood plain soils, like the Chewacla soil, are highly productive for growing many crops but are subject to frequent flooding during the rainy season.

Woodland
Productivity: High for loblolly pine
Management concerns: Seasonal wetness and flooding, which limit the use of heavy equipment
Suitable management practices:
- Because of wetness, logging operations should be scheduled during dry seasons.
- Hand planting reduces the need for heavy machinery.

Urban development
Suitability: Unsuited
Limitations: Seasonal wetness and flooding

Recreational development
Suitability: Poorly suited
Limitations: Seasonal wetness and flooding
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

DAM—Dam

This map unit consists of concrete and earthen barriers of significant size that obstruct the flow of water from major rivers in the county.

HaB—Hard Labor sandy loam, 2 to 6 percent slopes

Setting

Landform: Hills
Hillslope profile position: Backslopes and footslopes
Slope: Gently sloping
Slope shape: Slightly concave

Composition

Hard Labor and similar soils—75 percent
Dissimilar soils—25 percent

Typical Profile

Surface layer:
0 to 9 inches—dark brown sandy loam

Subsoil:
9 to 15 inches—yellowish brown sandy clay loam
15 to 26 inches—yellowish brown sandy clay
26 to 36 inches—yellowish brown clay that has red masses of oxidized iron
36 to 50 inches—yellowish brown and red sandy clay that has light brownish gray iron depletions
50 to 60 inches—yellowish brown and red sandy clay that has very pale brown iron depletions

Soil Properties and Qualities

Agricultural drainage class: Moderately well drained
Seasonal high water table: Perched, at a depth of 2.5 to 3.3 feet from December through April
Natural fertility: Low

Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep; the root zone may be somewhat limited by the soil horizons that have a platy structure

Dissimilar Components

- Cecil and Pacolet soils located on the higher or the more convex parts of the landscape
- Soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape
- Random areas of soils that have a loamy subsoil, are well drained, and are located on the higher or the more convex parts of the landscape

Use and Management

Land use: Mainly pasture; some woodland and cropland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: High for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Poorly suited
Limitations: Seasonal wetness and slow permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Moderately suited
Limitations: Seasonal wetness
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.

HwB—Hiwassee sandy loam, 0 to 4 percent slopes

Setting

Landform: Stream terraces
Slope: Nearly level or gently sloping
Slope shape: Linear

Composition

Hiwassee and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 7 inches—dark reddish brown sandy loam

Subsoil:
7 to 20 inches—dark reddish brown clay
20 to 37 inches—dark red clay
37 to 50 inches—red clay that has light yellowish brown mottles
50 to 60 inches—red clay that has very pale brown and light yellowish brown mottles

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Whistlestop soils located on the lower terraces

Use and Management

Land use: Mainly pasture and woodland; some cropland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Moderately suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

LcB—Lloyd sandy loam, 2 to 6 percent slopes

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Lloyd and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 10 inches—dark brown sandy loam

Subsoil:
10 to 20 inches—dark reddish brown clay
20 to 55 inches—dark red clay
55 to 60 inches—red clay loam

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of soils that have soft bedrock at a depth of 40 to 60 inches

Use and Management

Land use: Mainly pasture and woodland (fig. 5); some cropland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Figure 5.—A stand of loblolly pine in an area of Lloyd sandy loam, 2 to 6 percent slopes. This deep, well drained soil is well suited to pine tree growth.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

LdD2—Lloyd sandy loam, 6 to 15 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Convex

Composition

Lloyd and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 5 inches—dark brown sandy loam

Subsoil:
5 to 10 inches—dark reddish brown sandy clay loam
10 to 20 inches—dark reddish brown clay
20 to 55 inches—dark red clay
55 to 60 inches—red sandy clay loam

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Random areas of soils that have soft bedrock at a depth of 40 to 60 inches and are located on summits and shoulders

Use and Management

Land use: Mainly pasture and woodland; some cropland

Field crops, hay, and pasture
Land capability classification: 4e
Suitability: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: Equipment use limitations, resulting from the slope, and erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Moderately suited
Limitations: Slope and moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

LfB3—Lloyd sandy clay loam, 2 to 6 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Lloyd and similar soils—85 percent
Dissimilar soils—15 percent

Typical Profile

Surface layer:
0 to 4 inches—dark reddish brown sandy clay loam

Subsoil:
4 to 25 inches—dark red clay
25 to 35 inches—reddish brown clay
35 to 59 inches—red sandy clay
59 to 60 inches—yellowish red sandy clay loam

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of soils that have a seasonal high water table at a depth of 3.5 to 5.0 feet and are located on the lower or the more concave parts of the landscape

Use and Management

Land use: Mainly pasture and woodland; some cropland

Field crops, hay, and pasture
Land capability classification: 3e
Suitability for field crops: Moderately suited
Suitability for hay and pasture: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and erosion in unprotected areas
Suitable management practices:
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

LfD3—Lloyd sandy clay loam, 6 to 15 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Mainly convex

Composition

Lloyd and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 4 inches—dark reddish brown sandy clay loam

Subsoil:
4 to 30 inches—dark red sandy clay
30 to 48 inches—reddish brown sandy clay
48 to 60 inches—red sandy clay

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Random areas of soils that have soft bedrock at a depth of 40 to 60 inches and are located on summits and shoulders

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 4e
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

LfE3—Lloyd sandy clay loam, 15 to 30 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately steep or steep
Slope shape: Mainly convex

Composition

Lloyd and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 4 inches—dark reddish brown sandy clay loam

Subsoil:
4 to 30 inches—dark red clay
30 to 45 inches—reddish brown sandy clay
45 to 60 inches—red sandy clay

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Random areas of soils that have soft bedrock at a depth of 40 to 60 inches and are located on summits and shoulders

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 7e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

MaB2—Madison sandy loam, 2 to 6 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Madison and similar soils—83 percent
Dissimilar soils—17 percent

Typical Profile

Surface layer:
0 to 5 inches—yellowish brown sandy loam

Subsoil:
5 to 10 inches—yellowish red sandy clay
10 to 17 inches—red clay
17 to 24 inches—red sandy clay
24 to 38 inches—red sandy clay loam that has yellow and strong brown mottles

Substratum:
38 to 50 inches—yellowish red, brown, and reddish yellow sandy clay loam saprolite
50 to 60 inches—yellowish red, brown, and reddish yellow sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep
Other distinctive features: Common or many flakes of mica in the upper part of the solum and many flakes of mica in the lower part of the solum

Dissimilar Components

- Cataula and Hard Labor soils located on the lower or the more concave parts of the landscape
- Random areas of Bethlehem soils

Use and Management

Land use: Mainly pasture and woodland; some cropland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

MaD2—Madison sandy loam, 6 to 15 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Mainly convex

Composition

Madison and similar soils—75 percent
Dissimilar soils—25 percent

Typical Profile

Surface layer:
0 to 5 inches—yellowish brown sandy loam

Subsoil:
5 to 10 inches—yellowish red sandy clay
10 to 17 inches—red clay
17 to 24 inches—red sandy clay
24 to 38 inches—red sandy clay loam that has yellow and strong brown mottles

Substratum:
38 to 50 inches—yellowish red, brown, and reddish yellow sandy clay loam saprolite
50 to 60 inches—yellowish red, brown, and reddish yellow sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep
Other distinctive features: Common or many flakes of mica in the upper part of the solum and many flakes of mica in the lower part of the solum

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Bethlehem soils located on summits and shoulders
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape
- Random areas of soils that have a loamy subsoil, have occasional, very brief flooding, and are located in swales

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 4e
Suitability: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

MaE2—Madison sandy loam, 15 to 30 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep or steep
Slope shape: Mainly convex

Composition

Madison and similar soils—75 percent
Dissimilar soils—25 percent

Typical Profile

Surface layer:
0 to 5 inches—yellowish brown sandy loam

Subsoil:
5 to 10 inches—yellowish red sandy clay
10 to 17 inches—red clay
17 to 24 inches—red sandy clay
24 to 38 inches—red sandy clay loam that has yellow and strong brown mottles

Substratum:
38 to 50 inches—yellowish red, brown, and reddish yellow sandy clay loam saprolite
50 to 60 inches—yellowish red, brown, and reddish yellow sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep
Other distinctive features: Common or many flakes of mica in the upper part of the solum and many flakes of mica in the lower part of the solum

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Bethlehem and Saw soils located on summits and shoulders
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches and are located on summits and shoulders
- Random areas of soils that have a loamy subsoil, have hard bedrock at a depth of 20 to 40 inches, and are located on summits and shoulders

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 7e
Suitability for field crops: Unsuited

Suitability for hay and pasture: Poorly suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: Erosion in unprotected areas and moderately steep or steep slopes, which limit the use of heavy equipment
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

MdB3—Madison sandy clay loam, 2 to 6 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Madison and similar soils—95 percent
Dissimilar soils—5 percent

Typical Profile

Surface layer:
0 to 5 inches—reddish brown sandy clay loam

Subsoil:
5 to 20 inches—red sandy clay
20 to 30 inches—red clay loam

Substratum:
30 to 50 inches—red loam saprolite
50 to 60 inches—yellowish red sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Saw soils

Use and Management

Land use: Mainly woodland and pasture

Field crops, hay, and pasture
Land capability classification: 3e
Suitability for field crops: Moderately suited
Suitability for hay and pasture: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and erosion in unprotected areas
Suitable management practices:
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

MdD3—Madison sandy clay loam, 6 to 15 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Mainly convex

Composition

Madison and similar soils—85 percent
Dissimilar soils—15 percent

Typical Profile

Surface layer:
0 to 5 inches—reddish brown sandy clay loam

Subsoil:
5 to 20 inches—red sandy clay
20 to 30 inches—red clay loam

Substratum:
30 to 50 inches—red loam saprolite
50 to 60 inches—yellowish red sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Cataula and Hard Labor soils located on the lower or the more concave parts of the landscape
- Random areas of Saw soils on summits and shoulders
- Random areas of Wynott and Winnsboro soils on summits and shoulders
- Random areas of soils that have a loamy subsoil, have occasional, very brief flooding, and are located in swales

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 6e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and erosion in unprotected areas
Suitable management practices:
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Well suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Well suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

MdE3—Madison sandy clay loam, 15 to 30 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep or steep
Slope shape: Mainly convex

Composition

Madison and similar soils—75 percent
Dissimilar soils—25 percent

Typical Profile

Surface layer:
0 to 5 inches—reddish brown sandy clay loam

Subsoil:
5 to 20 inches—red sandy clay
20 to 30 inches—red clay loam

Substratum:
30 to 50 inches—red loam saprolite
50 to 60 inches—yellowish red sandy loam

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate

Available water capacity: Moderate
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Cataula and Hard Labor soils located on the lower or the more concave parts of the landscape
- Random areas of Bethlehem, Winnsboro, and Wynott soils located on summits and shoulders
- Random areas of soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of soils that have a seasonal high water table at a depth of 3.5 to 5.0 feet and are on the lower or the more concave parts of the landscape
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located in the lower or the more concave parts of the landscape

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 7e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Poorly suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Erosion in unprotected areas and moderately steep or steep slopes, which limit the use of heavy equipment
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

MsD—Madison-Bethlehem complex, 6 to 15 percent slopes, stony

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Mainly convex

Composition

Madison and similar soils—45 percent
Bethlehem and similar soils—35 percent
Dissimilar soils—20 percent

Typical Profile

Madison
Surface layer:
0 to 5 inches—yellowish brown sandy loam

Subsoil:
5 to 10 inches—yellowish red sandy clay
10 to 17 inches—red clay
17 to 24 inches—red sandy clay
24 to 38 inches—red sandy clay loam that has yellow and strong brown mottles

Substratum:
38 to 50 inches—yellowish red, reddish yellow, and brown sandy clay loam saprolite
50 to 60 inches—brown, reddish yellow, and yellowish red sandy loam saprolite

Bethlehem
Surface layer:
0 to 8 inches—dark yellowish brown gravelly sandy loam

Subsoil:
8 to 12 inches—yellowish red sandy clay loam
12 to 21 inches—red clay
21 to 33 inches—red sandy clay

Substratum:
33 to 38 inches—red, reddish yellow, and yellow sandy loam saprolite
38 inches—soft, highly weathered bedrock

Soil Properties and Qualities

Madison
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep
Other distinctive features: Common or many flakes of mica in the upper part of the solum and many flakes of mica in the lower part of the solum

Bethlehem
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Good
Root zone: Moderately deep

Dissimilar Components

- Random areas of Saw and Wilkes soils
- Random areas of soils that have soft bedrock at a depth of less than 20 inches
- Random areas of soils that have a loamy subsoil and have hard bedrock at a depth of 20 to 40 inches
- Random areas of soils that have a dark red subsoil and have soft bedrock at a depth of 40 to 60 inches
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 4e
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas, slope, and surface stones
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Madison—moderately high for loblolly pine; Bethlehem—moderate for loblolly pine
Management concerns: Erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tack absorption fields; depth to soft bedrock in areas of the Bethlehem soil; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited

Limitations: Slope, moderate permeability in the subsoil, depth to soft bedrock in areas of the Bethlehem soil, and erosion in unprotected areas
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

MsE—Madison-Bethlehem complex, 15 to 30 percent slopes, stony

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately steep or steep
Slope shape: Mainly convex

Composition

Madison and similar soils—60 percent
Bethlehem and similar soils—30 percent
Dissimilar soils—10 percent

Typical Profile

Madison
Surface layer:
0 to 5 inches—yellowish brown sandy loam

Subsoil:
5 to 10 inches—yellowish red sandy clay
10 to 17 inches—red clay
17 to 24 inches—red sandy clay
24 to 38 inches—red sandy clay loam that has yellow and strong brown mottles

Substratum:
38 to 50 inches—yellowish red, reddish yellow, and brown sandy clay loam saprolite
50 to 60 inches—brown, reddish yellow, and yellowish red sandy loam saprolite

Bethlehem
Surface layer:
0 to 8 inches—dark yellowish brown gravelly sandy loam

Subsoil:
8 to 12 inches—yellowish red sandy clay loam
12 to 21 inches—red clay
21 to 33 inches—red sandy clay

Substratum:
33 to 38 inches—red, reddish yellow, and yellow sandy loam saprolite
38 inches—soft, highly weathered bedrock

Soil Properties and Qualities

Madison
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low
Permeability: Moderate
Available water capacity: Moderate

Flooding: None
Tilth: Good
Root zone: Very deep
Other distinctive features: Common or many flakes of mica in the upper part of the solum and many flakes of mica in the lower part of the solum

Bethlehem
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Good
Root zone: Moderately deep

Dissimilar Components

- Random areas of Saw soils
- Random areas of soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 7e
Suitability: Unsuited
Management concerns: Erosion in unprotected areas, slope, and surface stones

Woodland
Productivity: Madison—moderately high for loblolly pine; Bethlehem—moderate for loblolly pine
Management concerns: Windthrow in areas of the Bethlehem soil, resulting from the depth to soft bedrock, and erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tack absorption fields; depth to soft bedrock in areas of the Bethlehem soil; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Slope, moderate permeability in the subsoil, depth to soft bedrock in areas of the Bethlehem soil, and erosion in unprotected areas

Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

M-W—Miscellaneous water

This map unit consists of constructed water areas that are used for industrial and sanitary applications.

PaB—Pacolet sandy loam, 2 to 6 percent slopes

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Pacolet and similar soils—90 percent
Dissimilar soils—10 percent

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown sandy loam

Subsoil:
7 to 20 inches—red sandy clay
20 to 25 inches—red sandy clay that has reddish yellow mottles
25 to 33 inches—red sandy clay loam that has yellowish red and pink mottles

Substratum:
33 to 54 inches—red, yellowish red, and pink sandy clay loam saprolite
54 to 60 inches—red, yellowish red, and very pale brown sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Random areas of Ashlar and Saw soils, which have hard bedrock at a depth of 22 to 40 inches

Use and Management

Land use: Mainly pasture and woodland; some cropland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited

Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

PaD2—Pacolet sandy loam, 6 to 15 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Convex

Composition

Pacolet and similar soils—85 percent
Dissimilar soils—15 percent

Typical Profile

Surface layer:
0 to 5 inches—dark brown sandy loam

Subsoil:
5 to 9 inches—yellowish red sandy clay loam
9 to 28 inches—red sandy clay
28 to 35 inches—red sandy clay loam that has yellowish red and pink mottles

Substratum:
35 to 60 inches—red, yellowish red, and yellowish brown sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Random areas of soils that have hard or soft bedrock at a depth of 40 to 60 inches
- Alluvial soils located in the included drainages

Use and Management

Land use: Mainly woodland; some pasture and cropland

Field crops, hay, and pasture
Land capability classification: 4e
Suitability: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

PaE2—Pacolet sandy loam, 15 to 25 percent slopes, moderately eroded

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep
Slope shape: Mostly convex

Composition

Pacolet and similar soils—90 percent
Dissimilar soils—10 percent

Typical Profile

Surface layer:
0 to 5 inches—dark brown sandy loam

Subsoil:
5 to 9 inches—yellowish red sandy clay loam
9 to 28 inches—red sandy clay
28 to 35 inches—red sandy clay loam that has yellowish red and pink mottles

Substratum:
35 to 60 inches—red, yellowish red, and yellowish brown sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Random areas of Bethlehem soils, which have soft bedrock at a depth of 20 to 40 inches
- Random areas of Saw soils, which have hard bedrock at a depth of 22 to 40 inches
- Random areas of Towaliga soils, which have an extremely gravelly surface layer
- Alluvial soils located in the included drainages

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 6e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: Erosion in unprotected areas and moderately steep slopes, which limit the use of heavy equipment
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

PcB3—Pacolet sandy clay loam, 2 to 6 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping
Slope shape: Convex

Composition

Pacolet and similar soils—90 percent
Dissimilar soils—10 percent

Typical Profile

Surface layer:
0 to 4 inches—brown sandy clay loam

Subsoil:
4 to 28 inches—red clay
28 to 55 inches—reddish brown sandy clay loam that has strong brown mottles

Substratum:
55 to 60 inches—reddish brown and white sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Random areas of Saw soils, which have hard bedrock at a depth of 22 to 40 inches

Use and Management

Land use: Mainly woodland and pasture; some cropland

Field crops, hay, and pasture
Land capability classification: 3e
Suitability for field crops: Moderately suited

Suitability for hay and pasture: Well suited
Management concerns: Erosion in unprotected areas
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Including seasonal cover crops in the cropping system helps to prevent further erosion.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and seedling mortality, resulting from the sandy clay loam surface layer, and erosion in unprotected areas
Suitable management practices:
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Well suited
Limitations: Moderate permeability in the subsoil, which may affect septic tank absorption fields
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Well suited
Limitations: No significant limitations

PcD3—Pacolet sandy clay loam, 6 to 15 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Convex

Composition

Pacolet and similar soils—85 percent
Dissimilar soils—15 percent

Typical Profile

Surface layer:
0 to 4 inches—brown sandy clay loam

Subsoil:
4 to 28 inches—red clay
28 to 55 inches—reddish brown sandy clay loam that has strong brown mottles

Substratum:
55 to 60 inches—reddish brown and white sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Moderately well drained Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Saw soils, which have hard bedrock at a depth of 22 to 40 inches
- Alluvial soils that are located in the included drainages

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 6e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Equipment use limitations and seedling mortality, resulting from the sandy clay loam surface layer
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

PcE3—Pacolet sandy clay loam, 15 to 25 percent slopes, severely eroded

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep
Slope shape: Mainly convex

Composition

Pacolet and similar soils—85 percent
Dissimilar soils—15 percent

Typical Profile

Surface layer:
0 to 4 inches—brown sandy clay loam

Subsoil:
4 to 28 inches—red clay
28 to 55 inches—reddish brown sandy clay loam that has strong brown mottles

Substratum:
55 to 60 inches—reddish brown and white sandy loam saprolite

Soil Properties and Qualities

Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Poor
Root zone: Very deep
Other distinctive features: The sandy clay loam surface layer, which is a mixture of the original surface soil and the upper part of the subsoil

Dissimilar Components

- Random areas of Saw soils, which have hard bedrock at a depth of 22 to 40 inches
- Alluvial soils that are located in the included drainages

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: 7e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Erosion in unprotected areas and moderately steep slopes, which limit the use of heavy equipment

Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

PdD—Pacolet-Saw complex, 6 to 15 percent slopes, stony

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Convex

Composition

Pacolet and similar soils—45 percent
Saw and similar soils—35 percent
Dissimilar soils—20 percent

Typical Profile

Pacolet
Surface layer:
0 to 6 inches—brown sandy loam

Subsurface layer:
6 to 9 inches—red sandy clay loam

Subsoil:
9 to 22 inches—red clay
22 to 28 inches—red sandy clay that has reddish yellow mottles
28 to 48 inches—red sandy clay loam that has yellowish red mottles

Substratum:
48 to 60 inches—red sandy loam saprolite that has pink and reddish yellow mottles

Saw
Surface layer:
0 to 4 inches—brown sandy loam

Subsoil:
4 to 10 inches—yellowish red sandy clay loam
10 to 16 inches—red clay
16 to 25 inches—red sandy clay loam

Substratum:
25 to 31 inches—red sandy loam saprolite
31 inches—hard, unweathered bedrock

Soil Properties and Qualities

Pacolet
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Saw
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Good
Root zone: Moderately deep

Dissimilar Components

- Random areas of Bethlehem soils
- Ashlar and Wake soils located on summits and shoulders
- Chewacla soils located on narrow flood plains of the included drainages
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas of soils that have a dark red subsoil and have soft bedrock at a depth of 40 to 60 inches
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 4e
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas, slope, and surface stones
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- A water management system reduces the hazard of erosion.
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Pacolet—moderately high for loblolly pine; Saw—moderate for loblolly pine

Management concerns: Erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Pacolet—moderately suited; Saw—poorly suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; depth to hard bedrock in areas of the Saw soil; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

PdE—Pacolet-Saw complex, 15 to 25 percent slopes, stony

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep
Slope shape: Mainly convex

Composition

Pacolet and similar soils—45 percent
Saw and similar soils—35 percent
Dissimilar soils—20 percent

Typical Profile

Pacolet
Surface layer:
0 to 6 inches—brown sandy loam

Subsurface layer:
6 to 9 inches—red sandy clay loam

Subsoil:
9 to 22 inches—red clay
22 to 28 inches—red sandy clay that has reddish yellow mottles
28 to 48 inches—red sandy clay loam that has yellowish red mottles

Substratum:
48 to 60 inches—red sandy loam that has pink and reddish yellow mottles

Saw
Surface layer:
0 to 4 inches—brown sandy loam

Subsoil:
4 to 10 inches—yellowish red sandy clay loam
10 to 16 inches—red clay
16 to 25 inches—red sandy clay loam

Substratum:
25 to 31 inches—red sandy loam saprolite
31 inches—hard, unweathered bedrock

Soil Properties and Qualities

Pacolet
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Saw
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low to moderately low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Good
Root zone: Moderately deep

Dissimilar Components

- Random areas of Ashlar and Wake soils on summits and shoulders
- Random areas of Bethlehem soils
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas of soils that have a dark red subsoil and have soft bedrock at a depth of 40 to 60 inches
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape
- Random areas of rock outcrop

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 6e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas, slope, and surface stones
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Pacolet—moderately high for loblolly pine; Saw—moderate for loblolly pine

Management concerns: Erosion in unprotected areas; moderately steep slopes, which limit the use of heavy equipment; and windthrow in areas of the Saw soil, resulting from the depth to hard bedrock

Suitable management practices:

- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development

Suitability: Poorly suited

Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; depth to hard bedrock in areas of the Saw soil; and erosion in unprotected areas

Suitable management practices:

- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development

Suitability: Moderately suited (fig. 6)

Figure 6.—The falls at High Falls State Park, surrounded by mixed hardwoods and pines in an area of Pacolet and Saw soils. The Pacolet and Saw soils are so intermingled in this area on the landscape that they could not be separated for mapping. The hillsides in this area are used for recreational trails in the park.

Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

PfE—Pacolet-Towaliga complex, 10 to 35 percent slopes, cobbly

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Strongly sloping to steep
Slope shape: Mainly convex

Composition

Pacolet and similar soils—55 percent
Towaliga and similar soils—40 percent
Dissimilar soils—5 percent

Typical Profile

Pacolet
Surface layer:
0 to 7 inches—dark yellowish brown sandy loam

Subsoil:
7 to 20 inches—red sandy clay
20 to 25 inches—red sandy clay that has reddish yellow mottles
25 to 33 inches—red sandy clay loam that has yellowish red and pink mottles

Substratum:
33 to 54 inches—red, yellowish red, and pink sandy clay loam saprolite
54 to 60 inches—red, yellowish red, and very pale brown sandy loam saprolite

Towaliga
Surface layer:
0 to 3 inches—dark brown extremely gravelly sandy loam

Subsoil:
3 to 11 inches—yellowish brown very gravelly loam
11 to 21 inches—strong brown very gravelly sandy loam
21 to 33 inches—yellowish red very gravelly sandy loam
33 to 48 inches—yellowish red clay
48 to 60 inches—yellowish red clay loam that has pink mottles

Soil Properties and Qualities

Pacolet
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None

Tilth: Good
Root zone: Very deep

Towaliga
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: Low
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Random areas of Bethlehem soils
- Random areas of soils that have a loamy subsoil and have soft bedrock at a depth of 10 to 20 inches

Use and Management

Land use: Woodland

Field crops, hay, and pasture
Land capability classification: 7e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Poorly suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: Erosion in unprotected areas and moderately steep and steep slopes, which limit the use of heavy equipment
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Using a chisel or subsoiler increases the root zone in compacted areas.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited or moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited
Limitations: Erosion in unprotected areas, slope, and gravel content in areas of the Towaliga soils
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

PnE—Pacolet-Urban land complex, 10 to 25 percent slopes

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Strongly sloping or moderately steep
Slope shape: Convex
Landscape features: Soils in this unit have been altered by cutting, filling, and shaping. Schools, parking lots, streets, commercial buildings, and residential dwellings are features of the landscape.

Composition

Pacolet and similar soils—60 percent
Urban land—20 percent
Dissimilar soils—20 percent

Typical Profile

Pacolet
Surface layer:
0 to 7 inches—dark yellowish brown sandy loam

Subsoil:
7 to 20 inches—red sandy clay
20 to 25 inches—red sandy clay that has reddish yellow mottles
25 to 33 inches—red sandy clay loam that has yellowish red and pink mottles

Substratum:
33 to 54 inches—red, yellowish red, and pink sandy clay loam saprolite
54 to 60 inches—red, strong brown, and very pale brown sandy loam saprolite

Urban land
Urban land consists of areas that have been altered by cutting, filling, and shaping. Schools, parking lots, streets, commercial buildings, and residential dwellings are located in these areas.

Soil Properties and Qualities

Pacolet
Agricultural drainage class: Well drained
Natural fertility: Low
Surface layer organic matter: Moderately low
Permeability: Moderate
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Random areas of Saw soils located on summits and shoulders
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape

Use and Management

Urban development
Suitability: Poorly suited or moderately suited
Limitations: Slope; moderate permeability in the subsoil, which may affect septic tank absorption fields; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited or moderately suited
Limitations: Erosion in unprotected areas and slope
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Pq—Pits, quarry

This map unit consists of areas of large quarries or pits from which soil or soil parent materials have been removed. They are variable in size and depth. Some areas are ponded intermittently.

PrE—Prosperity-Bush River complex, 15 to 25 percent slopes

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep
Slope shape: Convex

Composition

Prosperity and similar soils—61 percent
Bush River and similar soils—16 percent
Dissimilar soils—23 percent

Typical Profile

Prosperity
Surface layer:
0 to 3 inches—dark yellowish brown sandy loam

Subsurface layer:
3 to 6 inches—yellowish brown sandy loam

Subsoil:
6 to 15 inches—yellowish red sandy clay that has red and light reddish brown masses of oxidized iron
15 to 25 inches—strong brown sandy clay that has red and light reddish brown masses of oxidized iron
25 to 35 inches—yellowish brown sandy clay that has light gray iron depletions and yellowish red masses of oxidized iron

Substratum:
35 to 60 inches—weathered, highly fractured bedrock

Bush River
Surface layer:
0 to 5 inches—brown sandy loam

Subsoil:
5 to 16 inches—yellowish red clay that has red and yellow masses of oxidized iron
16 to 25 inches—strong brown sandy clay that has strong brown masses of oxidized iron and light olive brown iron depletions
25 to 31 inches—yellowish brown sandy clay that has light gray iron depletions and yellowish red masses of oxidized iron
31 to 40 inches—yellowish brown sandy clay that has white and light brownish gray iron depletions and red and strong brown masses of oxidized iron

Substratum:
40 to 48 inches—yellowish brown sandy loam saprolite that has light brownish gray masses of clay
48 to 60 inches—soft, highly weathered bedrock

Soil Properties and Qualities

Prosperity
Agricultural drainage class: Moderately well drained
Seasonal high water table: Perched, at a depth of 1.5 to 2.5 feet from December through March
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Low
Flooding: None
Tilth: Good
Root zone: Moderate

Bush River
Agricultural drainage class: Moderately well drained
Seasonal high water table: Perched, at a depth of 1.5 to 2.5 feet from December through March
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Deep

Dissimilar Components

- Madison, Bethlehem, Wynott, and Wilkes soils located on summits and shoulders
- Random areas of Ashlar soils
- Random areas of well drained soils that have bedrock at a depth of more than 60 inches and are located on summits and shoulders
- Random areas of soils that have a seasonal high water table at a depth of 1.5 to 2.5 feet and are located on the lower or the more concave parts of the landscape

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 7e
Suitability: Unsuited

Woodland
Productivity: Moderately high for loblolly pine and hardwoods
Management concerns: Shallow depth to water table and erosion in unprotected areas
Suitable management practices:
- Harvesting operations should be conducted during the dry season.
- Performing planting operations on the contour helps to minimize erosion.

Urban development
Suitability: Poorly suited
Management concerns: Wetness and high shrink-swell potential, which limit building site development, and slow permeability in the subsoil and wetness, which limit septic tank absorption fields
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Poorly suited
Limitations: Seasonal wetness and high shrink-swell potential, which limit recreational structures
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.

RvA—Riverview loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flood plains
Slope: Nearly level
Slope shape: Slightly concave or linear

Composition

Riverview and similar soils—90 percent
Dissimilar soils—10 percent

Typical Profile

Surface layer:
0 to 6 inches—dark brown loam

Subsoil:
6 to 16 inches—dark yellowish brown clay loam
16 to 32 inches—brown clay loam
32 to 45 inches—strong brown clay loam
45 to 60 inches—strong brown sandy clay loam that has pale brown iron depletions

Soil Properties and Qualities

Agricultural drainage class: Well drained
Seasonal high water table: Apparent, at a depth of 3.0 to 5.0 feet from December through March

Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Moderate
Available water capacity: High
Flooding: Occasional
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Wehadkee soils that are hydric
- Chewacla soils located on the lower parts of the landscape
- Buncombe soils located on adjacent stream levees
- Random areas of Toccoa soils

Use and Management

Land use: Mainly wildlife and woodland

Field crops, hay, and pasture
Land capability classification: 2w
Suitability: Well suited
Management concerns: Flooding
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.
- Rotational grazing reduces damage in areas prone to flooding.

Woodland
Productivity: Very high for loblolly pine
Management concerns: Flooding
Suitable management practices:
- Limiting timber operations to the dry season reduces the risk of damage from flooding.

Urban development
Suitability: Unsuited

Recreational development
Suitability: Moderately suited
Limitations: Occasional flooding
Suitable management practices:
- Placing playground equipment, picnic and camping facilities, and paths and trails in the higher areas reduces the risk of damage from flooding.

SeB—Sedgefield sandy loam, 0 to 4 percent slopes

Setting

Landform: Hills
Hillslope profile position: Broad toeslopes
Slope: Nearly level or gently sloping
Slope shape: Linear

Composition

Sedgefield soils—82 percent
Dissimilar soils—18 percent

Typical Profile

Surface layer:
0 to 6 inches—dark olive brown sandy loam

Subsurface layer:
6 to 11 inches—olive brown sandy loam

Subsoil:
11 to 16 inches—olive brown sandy clay loam that has light gray iron depletions and yellowish brown mottles
16 to 24 inches—yellowish brown clay that has light gray iron depletions and yellowish brown masses of oxidized iron
24 to 32 inches—yellowish brown clay that has gray iron depletions and yellowish brown masses of oxidized iron
32 to 40 inches—gray clay that has strong brown masses of oxidized iron
40 to 50 inches—gray clay that has strong brown masses of oxidized iron and gray uncoated sand grains

Substratum:
50 to 60 inches—gray sandy clay loam saprolite that has yellowish brown masses of oxidized iron

Soil Properties and Qualities

Agricultural drainage class: Somewhat poorly drained
Seasonal high water table: Perched, at a depth of 1.0 to 1.5 feet from January through March
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: High
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Random areas of soils that lack iron depletions in the upper 10 inches of the subsoil
- Alluvial soils located in the included drainages

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 2w
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Moderately suited
Management concerns: Wetness

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Seasonal wetness, which limits the use of heavy machinery; seedling mortality, resulting from seasonal wetness; and erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.

- Limiting timber operations to the dry season reduces the risk of damage from seasonal wetness.

Urban development
Suitability: Poorly suited
Limitations: Slow permeability in the subsoil, which limits septic tank absorption fields, and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Limitations to building site development may be reduced by special design and construction.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Poorly suited
Limitations: Seasonal wetness and slow permeability in the subsoil, which limit the use for camping, picnic, and playground areas

ToA—Toccoa sandy loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains
Slope: Nearly level
Slope shape: Slightly concave or linear

Composition

Toccoa and similar soils—97 percent
Dissimilar soils—3 percent

Typical Profile

Surface layer:
0 to 4 inches—brown fine sandy loam

Underlying material:
4 to 22 inches—strong brown sandy loam
22 to 35 inches—yellowish red sandy loam
35 to 43 inches—yellowish red loamy sand
43 to 57 inches—yellowish red sandy loam
57 to 60 inches—strong brown loam that has brown iron depletions and dark yellowish brown masses of oxidized iron

Soil Properties and Qualities

Agricultural drainage class: Moderately well drained or well drained
Seasonal high water table: Apparent, at a depth of 3.3 to 5.0 feet from December through April
Natural fertility: Low
Surface layer organic matter: Moderately low or moderate
Permeability: Moderately rapid
Available water capacity: Moderate
Flooding: Frequent
Tilth: Good

Root zone: Very deep, except from early winter to mid-spring when the seasonal high water table is at a depth of 3.3 to 5.0 feet or when the soil is flooded
Other distinctive features: Bedding planes and thin strata of sandy or loamy texture occur throughout the C horizons

Dissimilar Components

- Buncombe soils located on adjacent stream levees
- Random areas of Riverview soils

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: 3w
Suitability for field crops: Moderately suited
Suitability for hay and pasture: Well suited
Management concerns: Seasonal wetness and flooding
- Planting operations should be conducted during the drier periods.

Woodland
Productivity: High for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Unsuited
Limitations: Seasonal wetness and flooding

Recreational development
Suitability: Unsuited
Limitations: Seasonal wetness and flooding

Ud—Udorthents, loamy

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping or sloping
Slope shape: Convex

Composition

Udorthents—85 percent
Dissimilar soils—15 percent

Typical Profile

These areas have been altered by cutting, filling, or shaping. In some areas, 2.0 to 8.0 feet of soil and soil material have been removed.

Use and Management

Land use: Mainly borrow areas, landfills, and idle land

Field crops, hay, and pasture
Land capability classification: None assigned

Woodland
Productivity: None assigned

Urban development
Suitability: Poorly suited

Recreational development
Suitability: Poorly suited

Ur—Urban land

This map unit consists of areas where the original soils have been removed or altered during excavation and construction activities. Schools, parking lots, streets, commercial buildings, and residential dwellings are located in these areas.

W—Water

This map unit consists of areas of water, including ponds, lakes, and rivers. The largest mapped areas of water in, or partially in, Monroe County are the Ocmulgee River, the Towaliga River, Lake Juliette, and High Falls Lake.

WaD—Wake-Ashlar-Rock outcrop complex, 2 to 15 percent slopes

Setting

Landform: Hills
Hillslope profile position: Summits and backslopes
Slope: Gently sloping to strongly sloping
Slope shape: Convex

Composition

Wake and similar soils—34 percent
Ashlar and similar soils—25 percent
Rock outcrop—25 percent
Dissimilar soils—16 percent

Typical Profile

Wake
Surface layer:
0 to 4 inches—dark brown loamy sand

Substratum:
4 to 13 inches—brown loamy sand saprolite
13 inches—hard, unweathered bedrock

Ashlar
Surface layer:
0 to 7 inches—yellowish brown coarse sandy loam

Subsoil:
7 to 15 inches—brownish yellow coarse sandy loam

Substratum:
15 to 25 inches—brownish yellow loamy coarse sand saprolite
25 inches—hard, unweathered bedrock

Rock outcrop
Exposed granite or granite gneiss that is hard

Soil Properties and Qualities

Wake
Agricultural drainage class: Excessively drained
Natural fertility: Low
Surface layer organic matter: Low
Permeability: Rapid
Available water capacity: Very low
Flooding: None
Tilth: Good
Root zone: Shallow

Ashlar
Agricultural drainage class: Excessively drained
Natural fertility: Low
Surface layer organic matter: Low
Permeability: Moderately rapid
Available water capacity: Very low or low
Flooding: None
Tilth: Good
Root zone: Moderately deep

Dissimilar Components

- Random areas of Pacolet and Saw soils
- Random areas of soils that have a clayey subsoil and have hard bedrock at a depth of less than 20 inches

Use and Management

Land use: Mainly woodland; some pasture

Field crops, hay, and pasture
Land capability classification: Ashlar—4e; Wake—4s; Rock outcrop—8s
Suitability for field crops: Ashlar and Wake—poorly suited; Rock outcrop—unsuited
Suitability for hay and pasture: Ashlar and Wake—moderately suited; Rock outcrop—unsuited
Management concerns: Erosion in unprotected areas; depth to hard bedrock, which limits the root zone; and low available water capacity
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.
- Returning crop residue to the soil helps to retain soil moisture

Woodland
Productivity: Ashlar—moderate for loblolly pine; Wake—low for loblolly pine
Management concerns: Windthrow, resulting from the depth to hard bedrock, and seedling mortality, resulting from the droughty nature of the soil

Urban development
Suitability: Ashlar—poorly suited; Wake and Rock outcrop—unsuited
Limitations: Depth to hard bedrock
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations in areas of the Ashlar soil.

Recreational development
Suitability: Ashlar—moderately suited; Wake and Rock outcrop—poorly suited
Limitations: Slope and depth to hard bedrock

Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

WeA—Wehadkee loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plains
Slope: Nearly level
Slope shape: Slightly concave

Composition

Wehadkee and similar soils—80 percent
Dissimilar soils—20 percent

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown loam that has common fine prominent strong brown oxidized rhizospheres

Subsoil:
6 to 27 inches—grayish brown clay loam

Substratum:
27 to 45 inches—grayish brown loamy sand
45 to 55 inches—dark grayish brown sandy clay loam
55 to 60 inches—dark grayish brown loamy sand

Soil Properties and Qualities

Agricultural drainage class: Poorly drained
Seasonal high water table: Apparent, at a depth of 0 to 1.0 foot from December through May
Natural fertility: Medium
Surface layer organic matter: Moderate or high
Permeability: Moderate
Available water capacity: Moderate
Flooding: Frequent
Tilth: Poor
Root zone: Limited by the seasonal high water table and flooding

Dissimilar Components

- Chewacla soils located on the higher parts of the flood plain
- Random areas of soils that have a clayey subsoil or substratum

Use and Management

Land use: Mainly wetland wildlife; some woodland

Field crops, hay, and pasture
Land capability classification: 6w
Suitability for field crops: Unsuited
Suitability for hay and pasture: Unsuited
Management concerns: Seasonal flooding

Woodland
Productivity: High for bald cypress
Management concerns: Seasonal flooding, which limits the use of heavy equipment, and seedling mortality, which is a concern because of seasonal flooding

Urban development
Suitability: Unsuited
Limitations: Seasonal flooding

Recreational development
Suitability: Poorly suited
Limitations: Seasonal flooding

WfA—Wehadkee loam, 0 to 1 percent slopes, frequently flooded, ponded

Setting

Landform: Flood plains
Slope: Nearly level
Slope shape: Slightly concave or linear
Landscape features: These areas are ponded primarily by beaver activity. Most of these areas are open or sparsely wooded (fig. 7).

Figure 7.—Typical landscape for Wehadkee loam, 0 to 1 percent slopes, frequently flooded, ponded. These wetland soils support unique vegetation, provide valuable habitat for wildlife, and filter groundwater.

Composition

Wehadkee and similar soils—80 percent
Dissimilar soils—20 percent

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown loam that has common fine prominent strong brown oxidized rhizospheres

Subsoil:
6 to 27 inches—grayish brown clay loam

Substratum:
27 to 45 inches—grayish brown loamy sand
45 to 55 inches—dark grayish brown sandy clay loam
55 to 60 inches—dark grayish brown loamy sand

Soil Properties and Qualities

Agricultural drainage class: Very poorly drained
Seasonal high water table: Apparent, at a depth of 0 to 1.0 foot throughout the year
Natural fertility: Medium
Surface layer organic matter: Moderate or high
Permeability: Moderate
Available water capacity: Moderate
Flooding: Frequent
Tilth: Poor
Root zone: Limited by the seasonal high water table and flooding

Dissimilar Components

- Chewacla soils on the higher parts of the flood plain
- Random areas of soils that have a clayey subsoil or substratum

Use and Management

Land use: Mainly wetland wildlife; some woodland

Field crops, hay, and pasture
Land capability classification: 8w
Suitability for field crops: Unsuited
Suitability for hay and pasture: Unsuited
Management concerns: Seasonal flooding and ponding

Woodland
Productivity:
Management concerns: Seasonal wetness and flooding, which limit the use of heavy equipment, and seedling mortality, which is a concern because of seasonal flooding and ponding

Urban development
Suitability: Unsuited
Limitations: Seasonal flooding and ponding

Recreational development
Suitability: Poorly suited
Limitations: Seasonal flooding and ponding

WhB—Whistlestop sandy loam, 0 to 4 percent slopes, rarely flooded

Setting

Landform: Terraces
Slope: Nearly level or gently sloping
Slope shape: Slightly convex to linear

Composition

Whistlestop and similar soils—72 percent
Dissimilar soils—28 percent

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown loam

Subsoil:
7 to 26 inches—yellowish red clay
26 to 37 inches—yellowish red clay that has light yellowish brown iron depletions and red masses of oxidized iron
37 to 55 inches—yellowish red, red, and light brownish gray sandy clay

Substratum:
55 to 60 inches—strong brown sandy clay loam that has light gray iron depletions

Soil Properties and Qualities

Agricultural drainage class: Moderately well drained
Seasonal high water table: Apparent, at a depth of 2.5 to 3.3 feet from January through March
Natural fertility: Low
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: Rare
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Hiwassee soils located on the upper parts of the landscape
- Random areas of soils that have a clayey subsoil and are well drained
- Random areas of soils that have a fine-loamy subsoil and are well drained
- Random areas of soils that have a fine-loamy subsoil, have a seasonal high water table at a depth of 1.5 to 2.5 feet, and are located on the lower, more concave parts of the landscape

Use and Management

Land use: Woodland

Field crops, hay, and pasture
Land capability classification: 2e
Suitability: Well suited
Management concerns: Erosion in unprotected areas and seasonal wetness
Suitable management practices:
- A conservation tillage system increases the content of organic matter, helps maintain tilth, and reduces the hazard of erosion.

Woodland
Productivity: Moderately high for loblolly pine
Management concerns: No significant limitations

Urban development
Suitability: Poorly suited or moderately suited
Limitations: Seasonal wetness, which limits building site development, and slow permeability in the subsoil and wetness, which may affect septic tank absorption fields
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.
- Special design and application of septic systems reduce the soil limitations.

Recreational development
Suitability: Moderately suited
Limitations: Seasonal wetness
Suitable management practices:
- Limitations may be reduced by the installation of a drainage system.

WmE—Winnsboro-Wynott complex, 15 to 30 percent slopes, very stony

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately steep or steep
Slope shape: Mainly convex

Composition

Winnsboro soils—56 percent
Wynott soils—40 percent
Dissimilar soils—4 percent

Typical Profile

Winnsboro
Surface layer:
0 to 5 inches—very dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—dark yellowish brown sandy loam

Subsoil:
9 to 19 inches—strong brown clay
19 to 23 inches—dark yellowish brown clay that has common masses of manganese
23 to 42 inches—dark yellowish brown sandy clay loam that has yellowish and brownish mottles

Substratum:
42 to 50 inches—dark yellowish brown, very pale brown, brownish yellow, and dark grayish brown sandy clay loam saprolite
50 to 56 inches—dark yellowish brown, pale brown, and black sandy clay loam saprolite
56 to 60 inches—soft, weathered bedrock

Wynott
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—dark yellowish brown clay
17 to 23 inches—dark yellowish brown sandy clay that has brown mottles

Substratum:
23 to 37 inches—yellowish brown, pale brown, and black sandy loam saprolite
37 to 60 inches—soft, weathered bedrock

Soil Properties and Qualities

Winnsboro
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: High
Flooding: None
Tilth: Good
Root zone: Deep

Wynott
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Moderately deep

Dissimilar Components

- Wilkes soils located on summits and shoulders

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: Winnsboro—6e; Wynott—7e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.

- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slope; slow permeability in the subsoil, which may affect septic tank absorption fields; depth to soft bedrock in areas of the Wynott soil; moderate or high shrink-swell potential, which limits building site development; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Limitations to building site development may be reduced by special design and construction.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

WnD—Wynott-Wilkes-Winnsboro complex, 6 to 15 percent slopes

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Mainly convex

Composition

Wynott and similar soils—30 percent
Wilkes and similar soils—20 percent
Winnsboro and similar soils—20 percent
Dissimilar soils—30 percent

Typical Profile

Wynott
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—dark yellowish brown clay
17 to 23 inches—dark yellowish brown sandy clay that has brown mottles

Substratum:
23 to 37 inches—yellowish brown, pale brown, and black sandy loam saprolite
37 to 60 inches—soft, weathered bedrock

Wilkes
Surface layer:
0 to 3 inches—brown sandy loam

Subsurface layer:
3 to 6 inches—yellowish brown sandy loam

Subsoil:
6 to 10 inches—dark yellowish brown sandy clay loam
10 to 18 inches—dark yellowish brown sandy clay loam that has few fine prominent yellow and yellowish red mottles

Substratum:
18 to 45 inches—soft, weathered bedrock
45 inches—hard, unweathered bedrock

Winnsboro
Surface layer:
0 to 5 inches—very dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—dark yellowish brown sandy loam

Subsoil:
9 to 19 inches—strong brown clay
19 to 23 inches—dark yellowish brown clay that has common masses of manganese
23 to 42 inches—dark yellowish brown sandy clay loam that has yellowish and brownish mottles

Substratum:
42 to 50 inches—dark yellowish brown, very pale brown, brownish yellow, and dark grayish brown sandy clay loam saprolite
50 to 56 inches—multicolored sandy clay loam saprolite
56 to 60 inches—soft, weathered bedrock

Soil Properties and Qualities

Wynott
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Moderately deep

Wilkes
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Moderately slow
Available water capacity: Very low
Flooding: None
Tilth: Good
Root zone: Shallow

Winnsboro
Agricultural drainage class: Well drained
Natural fertility: Medium

Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: High
Flooding: None
Tilth: Good
Root zone: Deep

Dissimilar Components

- Madison and Mecklenburg soils located on the higher or the more convex parts of the landscape
- Bush River and Prosperity soils located on the lower or the more concave parts of the landscape
- Random areas of soils that have a seasonal high water table at a depth of 3.3 to 5.0 feet
- Random areas of soils that have bedrock at a depth of more than 60 inches

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: Wynott and Winnsboro—4e; Wilkes—6s
Suitability for field crops: Wynott and Winnsboro—poorly suited; Wilkes—unsuited
Suitability for hay and pasture: Moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slope; slow permeability in the subsoil, which may affect septic tank absorption fields; depth to soft bedrock in areas of the Wilkes and Wynott soils; moderate or high shrink-swell potential, which limits building site development; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Limitations to building site development may be reduced by special design and construction.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Wynott and Winnsboro—moderately suited; Wilkes—poorly suited
Limitations: Erosion in unprotected areas and depth to soft bedrock in areas of the Wilkes and Wynott soils
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

WnE—Wynott-Wilkes-Winnsboro complex, 15 to 30 percent slopes

Setting

Landform: Hills
Hillslope profile position: Backslopes
Slope: Moderately steep or steep
Slope shape: Mainly convex

Composition

Wynott and similar soils—40 percent
Wilkes and similar soils—30 percent
Winnsboro and similar soils—10 percent
Dissimilar soils—20 percent

Typical Profile

Wynott
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—dark yellowish brown clay
17 to 23 inches—dark yellowish brown sandy clay that has brown mottles

Substratum:
23 to 37 inches—yellowish brown, pale brown, and black sandy loam saprolite
37 to 60 inches—soft, weathered bedrock

Wilkes
Surface layer:
0 to 3 inches—brown sandy loam

Subsurface layer:
3 to 6 inches—yellowish brown sandy loam

Subsoil:
6 to 10 inches—dark yellowish brown sandy clay loam
10 to 18 inches—dark yellowish brown sandy clay loam that has few fine prominent yellow and yellowish red mottles

Substratum:
18 to 45 inches—soft, weathered bedrock
45 inches—hard, unweathered bedrock

Winnsboro
Surface layer:
0 to 5 inches—very dark grayish brown and dark brown sandy loam

Subsurface layer:
5 to 9 inches—dark yellowish brown sandy loam

Subsoil:
9 to 19 inches—strong brown clay

19 to 23 inches—dark yellowish brown clay that has common masses of manganese
23 to 42 inches—dark yellowish brown sandy clay loam that has yellowish and brownish mottles

Substratum:
42 to 50 inches—dark yellowish brown, very pale brown, brownish yellow, and dark grayish brown sandy clay loam saprolite
50 to 56 inches—dark yellowish brown, pale brown, and black sandy clay loam saprolite
56 to 60 inches—soft, weathered bedrock

Soil Properties and Qualities

Wynott
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Moderately deep

Wilkes
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Moderately slow
Available water capacity: Very low
Flooding: None
Tilth: Good
Root zone: Shallow

Winnsboro
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: High
Flooding: None
Tilth: Good
Root zone: Deep

Dissimilar Components

- Madison and Mecklenburg soils located on the higher or the more convex parts of the landscape
- Bush River and Prosperity soils located on the lower or the more concave parts of the landscape
- Random areas of soils that have a fine-loamy subsoil
- Random areas of soils that have iron depletions below the upper 10 inches of the clayey subsoil
- Random areas of soils that have bedrock at a depth of more than 60 inches
- Alluvial soils located in the included drainages

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: Wynott—7e; Wilkes—7s; Winnsboro—6e
Suitability for field crops: Unsuited
Suitability for hay and pasture: Wynott and Wilkes—poorly suited; Winnsboro—moderately suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slope; slow permeability in the subsoil, which may affect septic tank absorption fields; depth to soft bedrock in areas of the Wilkes and Wynott soils; moderate or high shrink-swell potential, which limits building site development; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Limitations to building site development may be reduced by special design and construction.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Wynott and Winnsboro—moderately suited; Wilkes—poorly suited
Limitations: Erosion in unprotected areas, slope, and depth to soft bedrock in areas of the Wilkes and Wynott soils
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

WoD—Wynott-Winnsboro-Mecklenburg complex, 6 to 15 percent slopes, very stony

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Moderately sloping or strongly sloping
Slope shape: Mainly convex

Composition

Wynott soils—30 percent
Winnsboro soils—25 percent
Mecklenburg soils—25 percent
Dissimilar soils—20 percent

Typical Profile

Wynott
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—dark yellowish brown clay
17 to 23 inches—dark yellowish brown sandy clay that has brown mottles

Substratum:
23 to 37 inches—yellowish brown, pale brown, and black sandy loam saprolite
37 to 60 inches—soft, weathered bedrock

Winnsboro
Surface layer:
0 to 5 inches—very dark grayish brown and dark brown sandy loam

Subsurface layer:
5 to 9 inches—dark yellowish brown sandy loam

Subsoil:
9 to 19 inches—strong brown clay
19 to 23 inches—dark yellowish brown clay that has common masses of manganese
23 to 42 inches—dark yellowish brown sandy clay loam that has yellowish and brownish mottles

Substratum:
42 to 50 inches—dark yellowish brown, very pale brown, brownish yellow, and dark grayish brown sandy clay loam saprolite
50 to 56 inches—dark yellowish brown, pale brown, and black sandy clay loam saprolite
56 to 60 inches—soft, weathered bedrock

Mecklenburg
Surface layer:
0 to 6 inches—dark brown sandy loam

Subsoil:
6 to 12 inches—reddish brown sandy clay loam
12 to 23 inches—yellowish red clay that has manganese concentrations
23 to 42 inches—yellowish red clay that has manganese concentrations

Substratum:
42 to 60 inches—strong brown sandy clay loam saprolite that has strong brown and dark brown mottles

Soil Properties and Qualities

Wynott
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Moderately deep

Winnsboro
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: High
Flooding: None
Tilth: Good
Root zone: Deep

Mecklenburg
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Very deep

Dissimilar Components

- Madison and Lloyd soils located on the higher or the more convex parts of the landscape
- Cataula soils located on the lower or the more concave parts of the landscape
- Random areas of Wilkes soils
- Random areas of soils that have bedrock at a depth of more than 60 inches

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: Wynott and Winnsboro—4e; Mecklenburg—3e
Suitability for field crops: Wynott and Winnsboro—poorly suited; Mecklenburg—moderately suited
Suitability for hay and pasture: Winnsboro and Wynott—moderately suited; Mecklenburg—well suited
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate to high for loblolly pine
Management concerns: Erosion in unprotected areas
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slow permeability in the subsoil, which may affect septic tank absorption fields; depth to soft bedrock in areas of the Wynott soil; moderate or high shrink-swell potential, which limits building site development; and erosion in unprotected areas

Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Limitations to building site development may be reduced by special design and construction.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and areas of slow permeability
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

WsB—Wynott-Winnsboro-Sedgefield complex, 2 to 6 percent slopes, very stony

Setting

Landform: Hills
Hillslope profile position: Shoulders and backslopes
Slope: Gently sloping
Slope shape: Mainly convex

Composition

Wynott soils—30 percent
Winnsboro soils—25 percent
Sedgefield soils—20 percent
Dissimilar soils—25 percent

Typical Profile

Wynott
Surface layer:
0 to 5 inches—dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—dark yellowish brown clay
17 to 23 inches—dark yellowish brown sandy clay that has brown mottles

Substratum:
23 to 37 inches—yellowish brown, pale brown, and black sandy loam saprolite
37 to 60 inches—soft, weathered bedrock

Winnsboro
Surface layer:
0 to 5 inches—very dark grayish brown and dark brown sandy loam

Subsurface layer:
5 to 9 inches—dark yellowish brown sandy loam

Subsoil:
9 to 19 inches—strong brown clay
19 to 23 inches—dark yellowish brown clay that has common masses of manganese

23 to 42 inches—dark yellowish brown sandy clay loam that has yellowish and brownish mottles

Substratum:
42 to 50 inches—dark yellowish brown, very pale brown, brownish yellow, and dark grayish brown sandy clay loam saprolite
50 to 56 inches—dark yellowish brown, pale brown, and black sandy clay loam saprolite
56 to 60 inches—soft, weathered bedrock

Sedgefield
Surface layer:
0 to 6 inches—dark olive brown sandy loam

Subsurface layer:
6 to 11 inches—olive brown sandy loam

Subsoil:
11 to 16 inches—olive brown sandy clay loam that has light gray iron depletions and yellowish brown masses of oxidized iron
16 to 24 inches—yellowish brown clay that has light gray iron depletions and yellowish brown masses of oxidized iron
24 to 32 inches—yellowish brown clay that has gray iron depletions and yellowish brown masses of oxidized iron
32 to 40 inches—gray clay that has strong brown masses of oxidized iron
40 to 50 inches—gray clay that has strong brown masses of oxidized iron and gray uncoated sand grains

Substratum:
50 to 60 inches—gray sandy clay loam saprolite that has yellowish brown masses of oxidized iron

Soil Properties and Qualities

Wynott
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: Moderate
Flooding: None
Tilth: Good
Root zone: Moderately deep

Winnsboro
Agricultural drainage class: Well drained
Natural fertility: Medium
Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: High
Flooding: None
Tilth: Good
Root zone: Deep

Sedgefield
Agricultural drainage class: Somewhat poorly drained
Seasonal high water table: Perched, at a depth of 1.0 to 1.5 feet from January through March
Natural fertility: Low

Surface layer organic matter: Low or moderately low
Permeability: Slow
Available water capacity: High
Flooding: None
Tilth: Good
Root zone: Deep

Dissimilar Components

- Random areas of Mecklenburg soils
- Random areas of soils that have iron depletions below the upper 10 inches of the subsoil
- Random areas of well drained soils that have bedrock at a depth of more than 60 inches

Use and Management

Land use: Mainly woodland

Field crops, hay, and pasture
Land capability classification: Wynott and Winnsboro—4e; Sedgefield—2w
Suitability for field crops: Poorly suited
Suitability for hay and pasture: Winnsboro—moderately suited; Wynott and Sedgefield—poorly suited
Management concerns: Seasonal wetness and erosion in unprotected areas
Suitable management practices:
- Overgrazed pastures should be reestablished and protected.

Woodland
Productivity: Moderate for loblolly pine
Management concerns: Erosion in unprotected areas and slope
Suitable management practices:
- Performing planting operations on the contour helps to minimize erosion.
- Hand planting reduces the need for heavy machinery.
- Proper placement of access systems and skid trails reduces the equipment limitation and helps minimize erosion.

Urban development
Suitability: Poorly suited
Limitations: Slow permeability in the subsoil, which may affect septic tank absorption fields; depth to soft bedrock in areas of the Wynott soil; moderate or high shrink-swell potential, which limits building site development; and erosion in unprotected areas
Suitable management practices:
- Special design and application of septic systems reduce the soil limitations.
- Limitations to building site development may be reduced by special design and construction.
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.

Recreational development
Suitability: Moderately suited
Limitations: Erosion in unprotected areas and areas of slow permeability
Suitable management practices:
- Maintaining a suitable vegetative cover and/or mulching helps to keep topsoil in place.
- Limitations may be reduced by the installation of a drainage system.

Use and Management of the Soils

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

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

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

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

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

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

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate

gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

Carmen Westerfield, district conservationist, Natural Resources Conservation Service, helped prepare this section.

Current farming and agricultural land in Monroe County consists of cropland and pasture. The average farm size is 250 acres and ranges from small farms of 25 acres to larger tracts of 1,000 acres. Over the years, cropland acres have decreased from 13,000 acres to approximately 5,000 acres. Primary crops are corn and sorghum, grown for silage, and some cotton. Conservation tillage is utilized on most row crop acres, which reduces stress on cultivated lands. There are approximately 25,000 acres of pasture, which are composed primarily of fescue and common bermudagrass mixes and bahiagrass.

Because the majority of farming operations are livestock related, mostly dairy, poultry, and beef cattle, nutrient management associated with animal waste is an important conservation practice. Additional conservation measures should deal with a resource systems approach and address such issues as installation of grazing systems and alternative water sources that include stream crossings, watering ramps, wells with pipelines, heavy-use protection, and troughs. Implementing heavy-use protection improves many degraded areas, such as concentrated travel paths and areas around barns, feeders, and hay rings. Stream banks, wetlands, and similar degraded areas may benefit from fencing, streambank stabilization, critical area treatment, and riparian buffer development and management. By establishing water access for livestock and treating critical areas, these older ponds can be further improved in order to meet today?s conservation standards.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Yields per Acre

The average yields per acre shown in table 5 are those that can be expected of the principal crops under a high level of management. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen,

phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

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

Crops other than those shown in the yields table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961).

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. All classes are present in the county except class 1 and class 5. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry. Monroe County soils have subclass designations of *e*, *w*, and *s*.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of the soils in this survey area is given in the section "Detailed Soil Map Units" and in the yields table.

Prime Farmland and Other Important Farmlands

Table 6 lists the map units in the survey area that are considered prime farmland and farmland of statewide importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use has been the loss of some prime farmland to industrial and urban uses. The construction of I-75 in Monroe County has opened a migration corridor for industry and heavy residential construction between Atlanta and Macon. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

For some soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

Forestland Productivity and Management

Josh A. Wheat, resource conservationist, Natural Resources Conservation Service, helped prepare this section.

Of the more than 254,300 acres in Monroe County, almost 76 percent, or 194,300 acres is forestland. About 181,300 acres, or 93 percent, of the forestland is privately owned, and the remainder is owned by the forest industry and local governments (USDA, 1997).

The most significant forest types in Monroe County include about 61,900 acres of oak-hickory and about 90,400 acres of natural stands of loblolly-shortleaf pine (USDA, 1997).

Virgin forest once covered most of the county. As settlement progressed in the area, however, the upland, well-drained soils were cleared for cultivation. The soils that remained in forestland consisted of soils that had slopes greater than 20 percent, the soils in flood plains and depressions, and the deep, excessively drained soils on ridges, uplands, and flood plains. Farming peaked in the early 1900s and the trend during the next several decades was away from cultivation and back toward forest and pasture. Since the early 1960s, the rural farm population has decreased significantly and has shifted toward an urban and non-farm rural population. Forested acres decreased by over 15,300 acres from 1989 to 1997 (USDA, 1997).

Over 69 percent of the forestland in Monroe County is considered to be fully or moderately stocked, and the remainder of the forestland is considered to be poorly stocked. Only about 26 percent of the forestland is considered to be even moderately productive, capable of producing, under average management, about 1 to 1.5 cords per acre per year (USDA, 1997). Much of the remaining acreage generally produces less than a cord per acre. Production on much of the existing forestland could be improved by thinning out mature trees and undesirable species. Protection from excessive grazing, fire, disease, and insects also could improve the stands. The Natural Resources Conservation Service, the Georgia Forestry Commission, or the Cooperative Extension Service can provide additional information about forestland productivity and management in the survey area.

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forestland management.

Forestland Productivity

Table 7 can be used by woodland owners and forest managers in planning the use of soils for wood crops. The table rates the potential for seedling mortality and lists, by

soil type, the common trees for those soils, the site index, and the productivity in cubic feet of wood volume per acre per year. It also lists the trees to manage for each soil type.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Productivity of a site can be improved through management practices, such as bedding, managing water supplies, applying fertilizer, proper thinning, insect and disease control, and planting genetically improved species.

Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forestland Management

Interpretive ratings are given for various aspects of forestland management in tables 8a and 8b. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water

table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Recreational Development

In tables 9a and 9b, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season

when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

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

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Wildlife Habitat

James R. Lathem, resource soil scientist, Natural Resources Conservation Service, helped prepare this section.

Soils affect the kind, amount, and vigor of vegetation available to wildlife as food and cover. The soils of Monroe County support a diversity of habitat that can sustain many wildlife species. Knowledge of soil types and the associated plant communities they support is valuable in managing wildlife. Generally, wildlife occupies areas that are the most suitable for their food, water, and cover requirements. Understanding soil-vegetation relationships is important in creating and maintaining productive areas

of wildlife habitat. Soil surveys can be used in management programs, such as habitat improvement, species reintroduction, and creation of wildlife refuges. A variety of habitat for a diversity of wildlife is an important objective in wildlife management. The habitat needs of wildlife should be considered in all decisions involving land use and management. Fish and wildlife are important in the county because they provide opportunities for recreation and are resources that improve the local economy.

About 80 percent of the acreage in Monroe County is forested and nearly 12 percent is used for row crops, pasture, and orchards. Most, 49 percent, of the forests are evergreen, about 32 percent are deciduous, about 3 percent are mixed evergreen and deciduous, and 5 percent are forested wetlands (NARSAL, 2005). The cropland and woodland provide good or fair habitat for wildlife.

Cropland and pasture are interspersed with pine and hardwood forests in the survey area. Very deep, well drained upland soils, such as the Cecil, Lloyd, and Madison soils, are important soils for cropland and pasture. These soils support many native and domestic plants that are important to terrestrial wildlife. Abandoned pastures, old fields, and field borders support numerous woody and herbaceous plants that provide food and cover for white-tailed deer, turkey, rabbit, fox, bob-white quail, songbirds, and other wildlife species. The major native plants of importance to wildlife include greenbrier, lespedezas, croton, ragweed, partridge pea, clover, and sumac. Domestic plants of importance to wildlife include corn, sorghum, soybeans, fescue, and small grains.

Madison, Cecil, and Lloyd soils are important soils for wildlife habitat in woodland areas. These soils support vegetation that provides habitat for white-tailed deer, turkey, raccoon, gray squirrel, opossum, fox, and other wildlife. The important overstory and understory woodland plant types are sweetgum, blackgum, dogwood, oak, hickory, tulip poplar, holly, blackberry, and maple. Young pine plantations and thinned stands of hardwoods are important areas that support numerous woody and herbaceous plants, which provide food and cover for wildlife.

Large stands of mixed hardwoods, including white oak, hickory, red maple, and tulip poplar, grow well on the Chewacla and Toccoa soils, which account for about 19,925 acres, or 8 percent, of Monroe County. These areas support species such as gray squirrel, turkey, white-tailed deer, raccoon, beaver, and ducks. Wetland areas on the Wehadkee soils provide important habitat for waterfowl and a variety of furbearers, including otter, beaver, muskrat, and raccoon. Blackgum and alder are among the important plants for wildlife in these areas. Wehadkee soils occur on about 1,055 acres, or about 0.4 percent, of the county.

Rock outcrops and the associated Ashlar and Wake soils comprise about 455 acres, or 0.1 percent, of Monroe County. Although relatively small in acreage, these areas provide a specialized habitat for some plant and animal species. Red cedar is an important tree for wildlife found in these areas.

Wildlife habitat can be improved and enhanced by restoring hedgerows, field borders, windbreaks, and stream buffers. The ability of pine plantations to support wildlife can be improved by retaining mast-producing trees, such as oak, wherever possible.

Monroe County has many small ponds and several miles of streams. Because of the fragile habitat requirements of fish, special efforts are needed to restrict both point and non-point sources of water pollution in the county. Good soil management practices for all types of land use are a primary consideration for controlling pollution in streams.

Soil types affect the kind and amount of vegetation that is available to wildlife as food and cover. The kind and abundance of wildlife depend largely on the amount and distribution of food and cover. Wildlife habitat can be improved by promoting the establishment of desirable plants and by diversifying and enhancing the existing plant cover.

Hydric Soils

This section lists the map units that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff, 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff, 2006) and in the “Soil Survey Manual” (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

WeA Wehadkee loam, 0 to 1 percent slopes, frequently flooded
WfA Wehadkee loam, 0 to 1 percent slopes, frequently flooded, ponded

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

CwA Chewacla loam, 0 to 2 percent slopes, frequently flooded
RvA Riverview loam, 0 to 2 percent slopes, occasionally flooded

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

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

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

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 10a and 10b show the degree and kind of soil limitations that affect dwellings with and without basements, local roads and streets, and shallow excavations.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using

machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Sanitary Facilities

Table 11 shows the degree and kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and

the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

Construction Materials

Table 12 gives information about the soils as potential sources of sand, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand is a natural aggregates suitable for commercial use with a minimum of processing. It is used in many kinds of construction. Specifications for each use vary widely. In the table, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand, the soil is considered a likely source regardless of thickness. The assumption is that the sand layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of roadfill and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of roadfill and topsoil. The lower the number, the greater the limitation.

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

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by

slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

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

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and embankments, dikes, and levees. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

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

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

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

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

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

The estimates of soil properties are shown in tables. They include engineering properties, physical and chemical properties, and pertinent soil and water features.

Engineering Properties

Table 14 gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group

index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

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

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

Physical and Chemical Soil Properties

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

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller. Only the percentages of clay are given in the table in this survey area.

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

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour,

when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

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

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil 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.

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

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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

Soil Features

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

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

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

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

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

Water Features

Table 17 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

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

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

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

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

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most

years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2006). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

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

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

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

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

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, active, thermic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Table 18 indicates the order, suborder, great group, subgroup, and family of the soil series in the survey area.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each

series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993) and in the "Field Book for Describing and Sampling Soils" (Schoeneberger and others, 2002). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2006). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Ashlar Series

Depth class: Moderately deep
Agricultural drainage class: Excessively drained
Permeability: Moderately rapid
Parent material: Residuum from granite and granite gneiss
Landform: Hills
Slope range: 2 to 25 percent
Taxonomic class: Coarse-loamy, mixed, semiactive, thermic Typic Dystrudepts

Geographically Associated Soils

- Pacolet soils, which have a fine particle-size control section and do not have bedrock within a depth of 60 inches
- Saw soils, which have a fine particle-size control section

Typical Pedon

Jasper County, Georgia; 4.5 miles southwest of Georgia Highway 11 at the Newton and Jasper County lines on county road, 100 feet west of road; 7.5-minute USGS topographic quadrangle, Stewart, GA (1964); lat. 33 degrees 25 minutes 27 seconds N. and long. 83 degrees 48 minutes 51 seconds W.

A—0 to 7 inches; yellowish brown (10YR 5/4) coarse sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bw—7 to 15 inches; brownish yellow (10YR 6/6) coarse sandy loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.

C—15 to 25 inches; brownish yellow (10YR 6/6) loamy coarse sand saprolite; single grained; very friable; few medium and large roots; very strongly acid; clear wavy boundary.

R—25 inches; hard granite gneiss.

Range in Characteristics

Thickness of the solum: 15 to 29 inches
Depth to hard bedrock: 23 to 40 inches
Content and size of coarse fragments: 0 to 15 percent gravel and cobbles throughout
Reaction: Very strongly acid or strongly acid

A horizon:
Thickness—4 to 7 inches
Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4
Texture—coarse sandy loam or sandy loam

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8

Texture—sandy loam or coarse sandy loam
Mottles—pink mottles in the lower part of some pedons

C horizon:
Color—brownish yellow or multicolored in shades of yellow, brown, and white
Texture—loamy coarse sand or coarse sandy loam saprolite

R layer:
Type of bedrock—unweathered igneous or high-grade metamorphic rock

Bethlehem Series

Depth class: Moderately deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Residuum from mica schist or mica gneiss
Landform: Hills
Slope range: 6 to 30 percent
Taxonomic class: Fine, kaolinitic, thermic Typic Kanhapludults (fig. 8)

Geographically Associated Soils

- Madison and Pacolet soils, which do not have bedrock within a depth of 60 inches

Typical Pedon

Butts County, Georgia; 0.5 mile south of Jackson on Georgia Highway 36 to Brownlee Road, 2.3 miles south to Lake Clark Road, 0.75 mile east, 400 feet north of road; 7.5-minute USGS topographic quadrangle, Jackson, GA (1964); lat. 33 degrees 15 minutes 18 seconds N. and long. 83 degrees 57 minutes 14 seconds W.

A—0 to 8 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; weak fine granular structure; very friable; many fine and common medium roots; 17 percent gravel; few fine flakes of mica; strongly acid; clear smooth boundary.
BA—8 to 12 inches; yellowish red (5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable; many fine roots; 3 percent gravel; few fine flakes of mica; strongly acid; clear smooth boundary.
Bt1—12 to 21 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; common fine and few medium roots; common distinct clay films on faces of peds; common fine flakes of mica; very strongly acid; gradual wavy boundary.
Bt2—21 to 33 inches; red (2.5YR 4/8) sandy clay; weak medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; common to many fine flakes of mica; very strongly acid; gradual wavy boundary.
C—33 to 38 inches; red (2.5YR 4/8), reddish yellow (7.5YR 6/8), and yellow (10YR 7/6) gravelly sandy loam saprolite; massive; friable; 15 percent gravel and cobbles; many fine flakes of mica; very strongly acid; gradual wavy boundary.
Cr—38 inches; highly weathered mica schist or mica gneiss

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: more than 40 inches
Content and size of coarse fragments: 0 to 40 percent gravel or cobbles in the A horizon; 0 to 35 percent gravel or cobbles in the E, BA, BE, and Bt horizons; and 15 to 40 percent gravel or cobbles in the BC and C horizons
Reaction: Very strongly acid or strongly acid

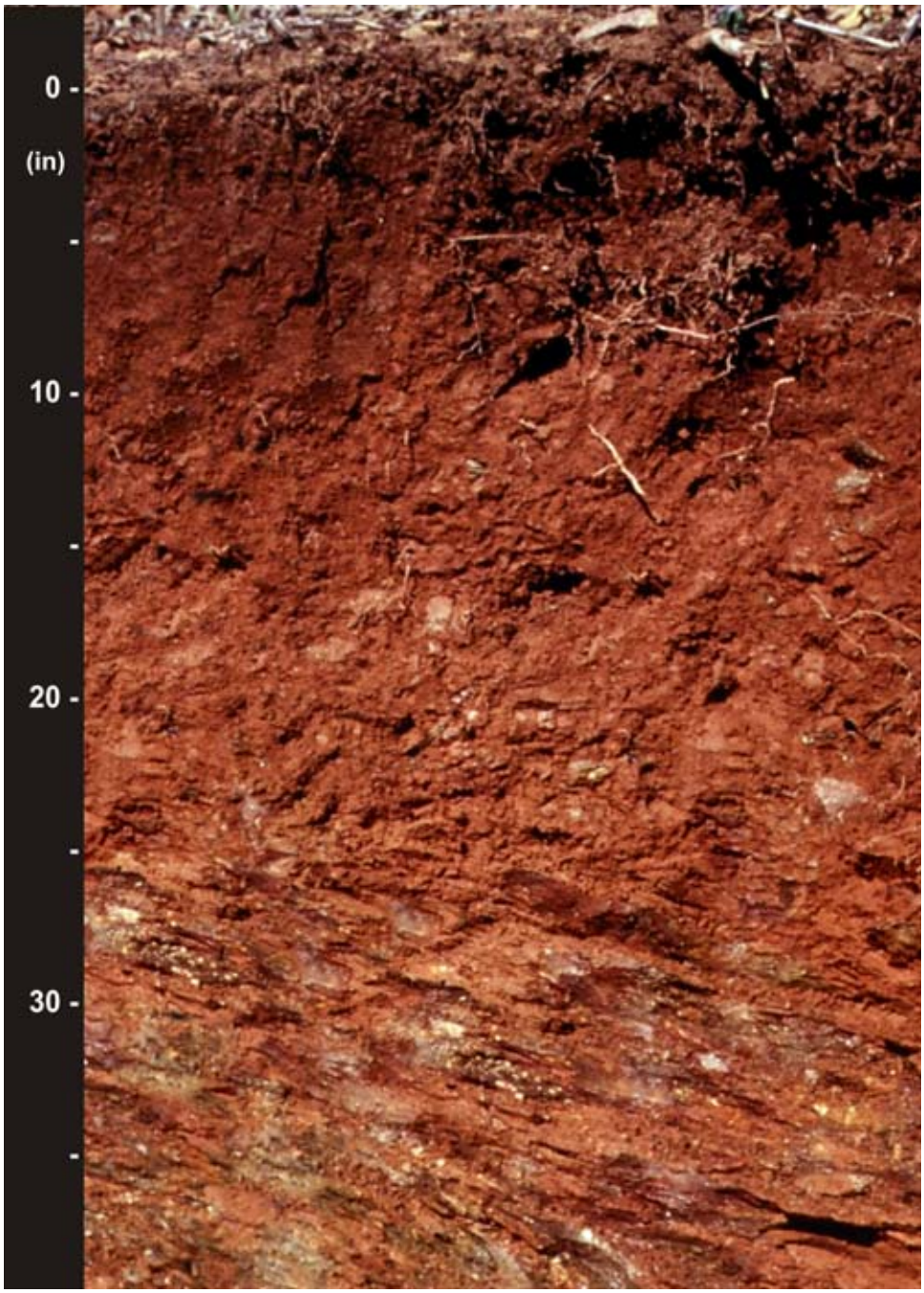

Figure 8.—Profile of a Bethlehem soil. This soil generally is mapped in a complex with Madison sandy loam on 6 to 30 percent slopes. It has weathered bedrock that can be root restrictive.

Content of mica flakes: few to common in the upper horizons; common to many in the lower part of the solum

A horizon:

Thickness—4 to 8 inches
Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 3 or 4
Texture (fine-earth fraction)—sandy loam

BA horizon:
Color—hue of 5YR, value of 4 or 5, and chroma of 6
Texture—sandy clay loam

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 4, and chroma of 6 or 8
Texture—sandy clay, clay loam, or clay

BC horizon (where present):
Color—hue of 2.5YR or 5YR, value of 4, and chroma of 6
Texture—sandy clay loam or clay loam
Mottles—shades of yellow, brown, and red

C horizon (where present):
Color—multicolored in shades of yellow, brown, and red
Texture (fine-earth fraction)—sandy loam saprolite

Cr horizon:
Type of bedrock—weathered high-grade metamorphic rock

Buncombe Series

Depth class: Very deep
Agricultural drainage class: Excessively drained
Permeability: Rapid
Parent material: Sandy alluvium
Landform: Stream levees
Slope range: 0 to 6 percent
Taxonomic class: Mixed, thermic Typic Udipsamments (fig. 9)

Geographically Associated Soils

- Chewacla soils, which are fine-loamy and are somewhat poorly drained
- Toccoa soils, which are coarse-loamy and are well drained or moderately well drained

Typical Pedon

Jasper County, Georgia; 0.2 mile north of Georgia Highway 16 on Old State Route 221, about 100 feet west of road; 7.5-minute USGS topographic quadrangle, Lloyd Shoals Dam, GA (1964); lat. 33 degrees 18 minutes 22 seconds N. and long. 83 degrees 50 minutes 12 seconds W.

A—0 to 10 inches; dark yellowish brown (10YR 4/4) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.
C1—10 to 35 inches; yellowish brown (10YR 5/4) sand; single grained; loose; few fine and medium roots; few very fine flakes of mica; very strongly acid; gradual wavy boundary.
C2—35 to 55 inches; yellowish brown (10YR 5/4) sand; few fine distinct brownish yellow (10YR 6/6) mottles; single grained; loose; few very fine flakes of mica; very strongly acid; gradual wavy boundary.
C3—55 or 60 inches; dark yellowish brown (10YR 4/4) loamy sand; few fine distinct brownish yellow (10YR 6/6) mottles; single grained; very friable; very strongly acid.

Range in Characteristics

Thickness of the sand: 40 to 60 inches or more
Reaction: Very strongly acid or strongly acid

Figure 9.—Profile of a Buncombe soil. This excessively drained soil formed in sandy alluvium and is located on the banks of rivers and large streams.

A horizon:

Thickness—6 to 10 inches
Color—hue of 10YR, value of 3 to 5, and chroma of 3 or 4
Texture—loamy sand or sand

C horizon (upper part):

Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8
Texture—sand or loamy sand
Mottles—shades of brown and yellow

C horizon (lower part):
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture—sand or loamy sand
Mottles—shades of brown and yellow

Bush River Series

Depth class: Deep
Agricultural drainage class: Moderately well drained
Permeability: Slow
Parent material: Residuum from a mixture of felsic and intermediate crystalline rock
Seasonal high water table: 1.5 to 2.5 feet; perched
Landform: Hills
Slope range: 6 to 25 percent
Taxonomic class: Fine, mixed, semiactive, thermic Aquic Hapludults

Geographically Associated Soils

- Bethlehem soils, which have a red subsoil, are well drained, and have soft bedrock at a depth of 20 to 40 inches
- Prosperity soils, which have soft bedrock at a depth of 20 to 40 inches

Typical Pedon

Monroe County, Georgia; 12.2 miles south of Forsyth, Georgia, on Georgia Highway 42, about 4.25 miles east on Georgia Highway 74, about 1,235 feet north into cutover timberland; 7.5-minute USGS topographic quadrangle, Smarr, GA (1985); lat. 32 degrees 53 minutes 10 seconds N. and long. 83 degrees 56 minutes 00 seconds W.

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

Bt1—5 to 16 inches; yellowish red (5YR 5/8) clay; moderate medium subangular blocky structure; firm; very sticky, very plastic; few fine roots; common medium prominent red (2.5YR 4/6) and common medium distinct yellow (10YR 7/8) masses of oxidized iron; many continuous prominent strong brown (7.5YR 5/6) clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—16 to 25 inches; strong brown (7.5YR 5/8) sandy clay; moderate medium subangular blocky structure; firm; moderately sticky, moderately plastic; common medium prominent light olive brown (2.5Y 5/3) iron depletions; common medium faint strong brown (7.5YR 5/8) masses of oxidized iron; very strongly acid; gradual wavy boundary.

Bt3—25 to 31 inches; yellowish brown (10YR 5/8) sandy clay; moderate medium subangular blocky structure; firm; moderately sticky, moderately plastic; common medium prominent light gray (2.5Y 7/2) iron depletions; common medium distinct yellowish red (5YR 5/6) masses of oxidized iron; very strongly acid; gradual wavy boundary.

Bt4—31 to 40 inches; yellowish brown (10YR 5/8) sandy clay that has seams of clay; moderate medium subangular blocky structure; firm; moderately sticky, moderately plastic; many medium prominent white (5Y 8/1) and light brownish gray (2.5Y 6/2) iron depletions; common medium prominent red (2.5YR 4/6) and many medium faint strong brown (7.5YR 5/8) masses of oxidized iron; very strongly acid; gradual wavy boundary.

C/Bt—40 to 48 inches; C portion is yellowish brown (10YR 6/8) sandy loam saprolite; massive; very friable; Bt portion is light brownish gray (2.5Y 6/2) clay; massive;

very firm; moderately sticky, moderately plastic; common medium distinct gray (2.5Y 5/1) iron depletions; strongly acid; gradual wavy boundary.

Cr—48 to 60 inches; highly weathered felsic and acid crystalline bedrock.

Range in Characteristics

Thickness of the solum: 40 to 55 inches
Depth to soft bedrock: 40 to 60 inches
Depth to hard bedrock: More than 60 inches
Reaction: Very strongly acid or strongly acid

A horizon:
Thickness—3 to 9 inches
Color—hue of 10YR, value of 3 or 4, and chroma of 3 or 4
Texture—sandy loam

E horizon (where present):
Color—hue of 10YR, value of 5 to 8, and chroma of 4
Texture—sandy loam

BEt horizon (where present):
Color—hue of 10YR, value of 5, and chroma of 4
Texture—sandy clay loam

Bt horizon (upper part):
Color—hue of 5YR to 10YR, value of 5 or 6, and chroma of 6 or 8
Texture—sandy clay or clay
Redoximorphic features—masses of oxidized iron in shades of brown in some pedons

Bt horizon (lower part):
Color—hue of 5YR or 10YR, value of 4 or 5, and chroma of 6 or 8
Texture—sandy clay or clay
Redoximorphic features—iron depletions in shades of brown and gray and masses of oxidized iron in shades of red and brown

BC horizon (where present):
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8
Texture—sandy clay loam or clay loam
Redoximorphic features—iron depletions in shades of brown and gray and masses of oxidized iron in shades of brown

C horizon (where present):
Color—hue of 5YR to 5Y, value of 5 to 8, and chroma of 3 to 8
Texture—sandy loam or loam saprolite
Redoximorphic features—iron depletions in shades of brown and gray and masses of oxidized iron in shades of brown

Cr horizon:
Type of bedrock—weathered, fractured felsic and acid crystalline rock that has some clay accumulation in fractures

Cataula Series

Depth class: Very deep
Agricultural drainage class: Moderately well drained
Permeability: Slow
Parent material: Residuum from felsic crystalline rock
Seasonal high water table: 2.5 to 3.3 feet; perched

Landform: Hills
Slope range: 2 to 6 percent
Taxonomic class: Fine, kaolinitic, thermic Oxyaquic Kanhapludults (fig. 10)

Geographically Associated Soils

- Cecil soils, which are well drained
- Hard Labor soils that have a browner subsoil than the Cataula soils

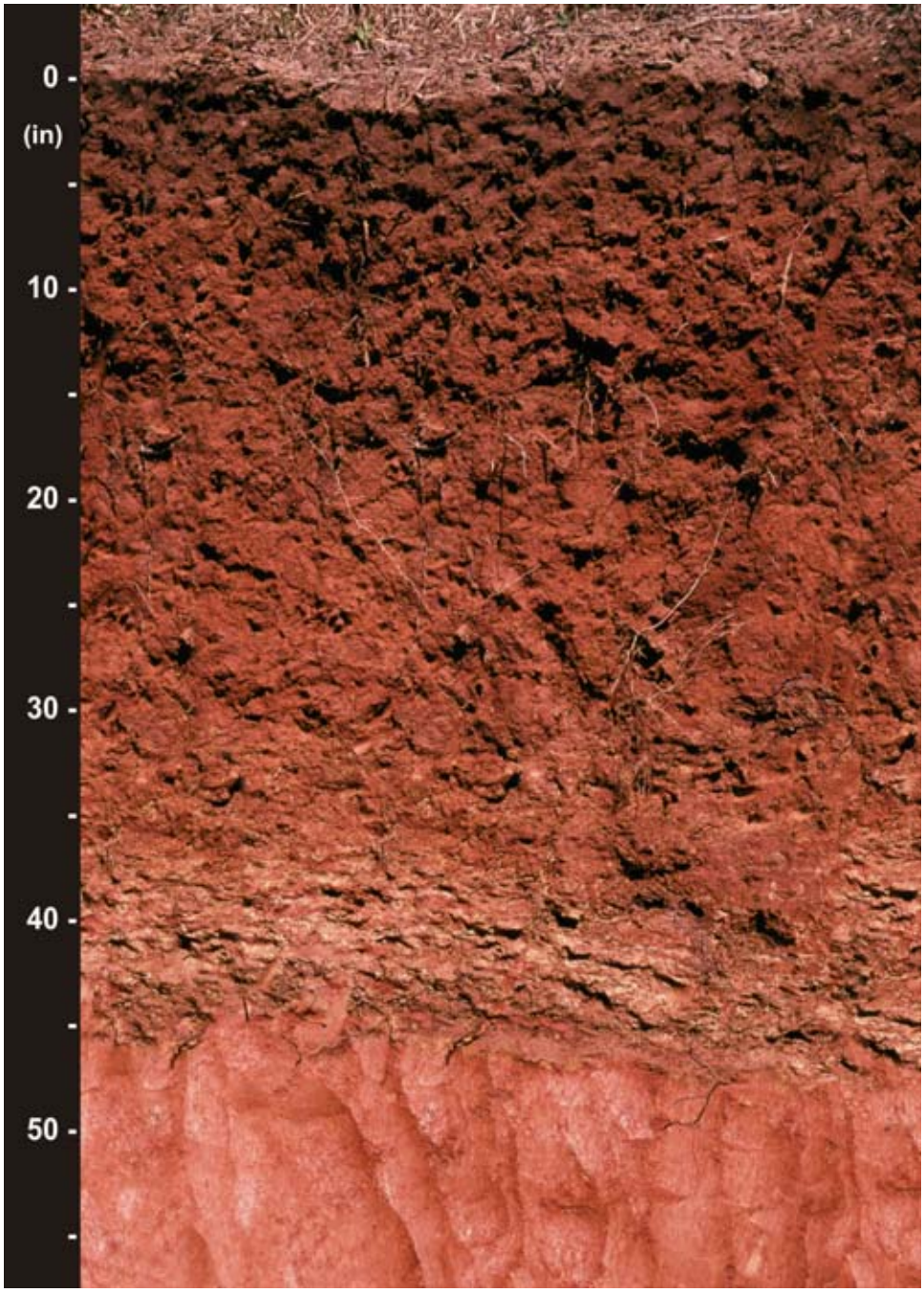

Figure 10.—Profile of a Cataula soil. This soil generally has a perched water table at a depth of 30 to 40 inches, as indicated by the gray iron depletions. The restrictive layer has a platy structure and has firm, brittle properties.

Typical Pedon

Butts County, Georgia; 1.5 miles east of Jackson, Georgia, on Georgia Highway 16 to Halls Bridge Road, 1.3 miles east to Jones Road, 3,000 feet north to cross fence, 1,000 feet west; 7.5-minute USGS topographic quadrangle, Jackson, GA (1985); lat. 33 degrees 18 minutes 03 seconds N. and long. 83 degrees 55 minute 29 seconds W.

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

EB—4 to 7 inches; yellowish brown (10YR 5/6) sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

Bt1—7 to 23 inches; red (2.5YR 4/6) clay; weak medium subangular blocky structure; firm; common fine roots; few continuous clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—23 to 30 inches; red (2.5YR 4/6) clay; weak medium subangular blocky and weak medium platy structure; firm; common fine roots; common medium prominent pale brown (10YR 6/3) iron depletions; common medium prominent brownish yellow (10YR 6/8) masses of oxidized iron; common continuous clay films on faces of peds; strongly acid; gradual wavy boundary.

Btx—30 to 40 inches; red (2.5YR 4/6) clay; moderate medium platy structure; firm; common medium prominent light brownish gray 10YR 6/2) and pale brown (10YR 6/3) iron depletions; many medium prominent brownish yellow (10YR 6/8) masses of oxidized iron in horizontal layers; dense and brittle in 10 percent of the red and brownish yellow areas; many continuous clay films on horizontal faces of peds; strongly acid; gradual smooth boundary.

BC—40 to 52 inches; red (2.5YR 4/6) and brownish yellow (10YR 6/8) sandy clay; weak medium subangular blocky structure; firm; light brownish gray (10YR 6/2) iron depletions; strongly acid; gradual smooth boundary.

C—52 to 60 inches; red (2.5YR 4/8) sandy clay loam saprolite; massive; firm; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches or more
Reaction: Very strongly acid or strongly acid, except where lime has been applied

A or Ap horizon:
Thickness—4 to 9 inches
Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 4 or 6
Texture—sandy loam

EB horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 6
Texture—sandy clay loam

Bt horizon:
Color—hue of 2.5YR, value of 4, and chroma of 6 or 8
Texture—sandy clay or clay
Redoximorphic features—iron depletions in shades of brown and masses of oxidized iron in shades of yellow and brown in some pedons

Btx horizon:
Color—hue of 2.5YR, value of 4, and chroma of 6 or 8; or multicolored in shades of yellow, gray, and brown
Texture—sandy clay or clay
Redoximorphic features—iron depletions in shades of gray and brown and masses of oxidized iron in shades of yellow and brown

BC horizon:
Color—hue of 10R to 5YR, value of 4 to 8, and chroma of 4 to 8
Texture—sandy clay, sandy clay loam, or clay loam
Redoximorphic features—iron depletions in shades of gray and masses of oxidized iron in shades of yellow and brown in some pedons

C horizon (where present):
Color—multicolored in shades of yellow, red, and brown
Texture—sandy loam or sandy clay loam saprolite

Cecil Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Residuum from felsic crystalline rock
Landform: Hills
Slope range: 2 to 10 percent
Taxonomic class: Fine, kaolinitic, thermic Typic Kanhapludults (fig. 11)

Geographically Associated Soils

- Cataula soils, which are moderately well drained
- Lloyd soils that have a dark red or red subsoil
- Pacolet soils, which have a thinner, clayey subsoil

Typical Pedon

Monroe County, Georgia; 0.17 mile north of Culloden, Georgia, on Main Street, 0.7 mile north on Norwood Street, 150 feet west of road in hay field; 7.5-minute USGS topographic quadrangle, Smarr, GA (1974); lat. 32 degrees 52 minutes 32 seconds N. and long. 84 degrees 05 minutes 37 seconds W.

A—0 to 4 inches; dark brown (7.5YR 3/3) sandy clay loam; weak fine granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.
BA—4 to 7 inches; dark reddish brown (5YR 3/3) sandy clay; weak fine subangular blocky structure; friable; common fine and very fine roots; few faint clay films on faces of peds; few fine mica flakes; very strongly acid; clear boundary.
Bt1—7 to 15 inches; yellowish red (5YR 4/6) sandy clay; weak medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; few fine mica flakes; very strongly acid; gradual wavy boundary.
Bt2—15 to 29 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual wavy boundary.
Bt3—29 to 45 inches; red (2.5YR 4/8) sandy clay; weak medium subangular blocky structure; firm; few faint clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual wavy boundary.
Bt4—45 to 55 inches; red (2.5YR 4/6) sandy clay; weak fine subangular blocky structure; friable; common fine flakes of mica; very strongly acid; gradual wavy boundary.
BC—55 or 60 inches; red (2.5 YR 4/6) sandy clay loam; weak fine subangular blocky structure; very friable; common fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the Bt horizon: 40 inches or more
Reaction: Very strongly acid or strongly acid

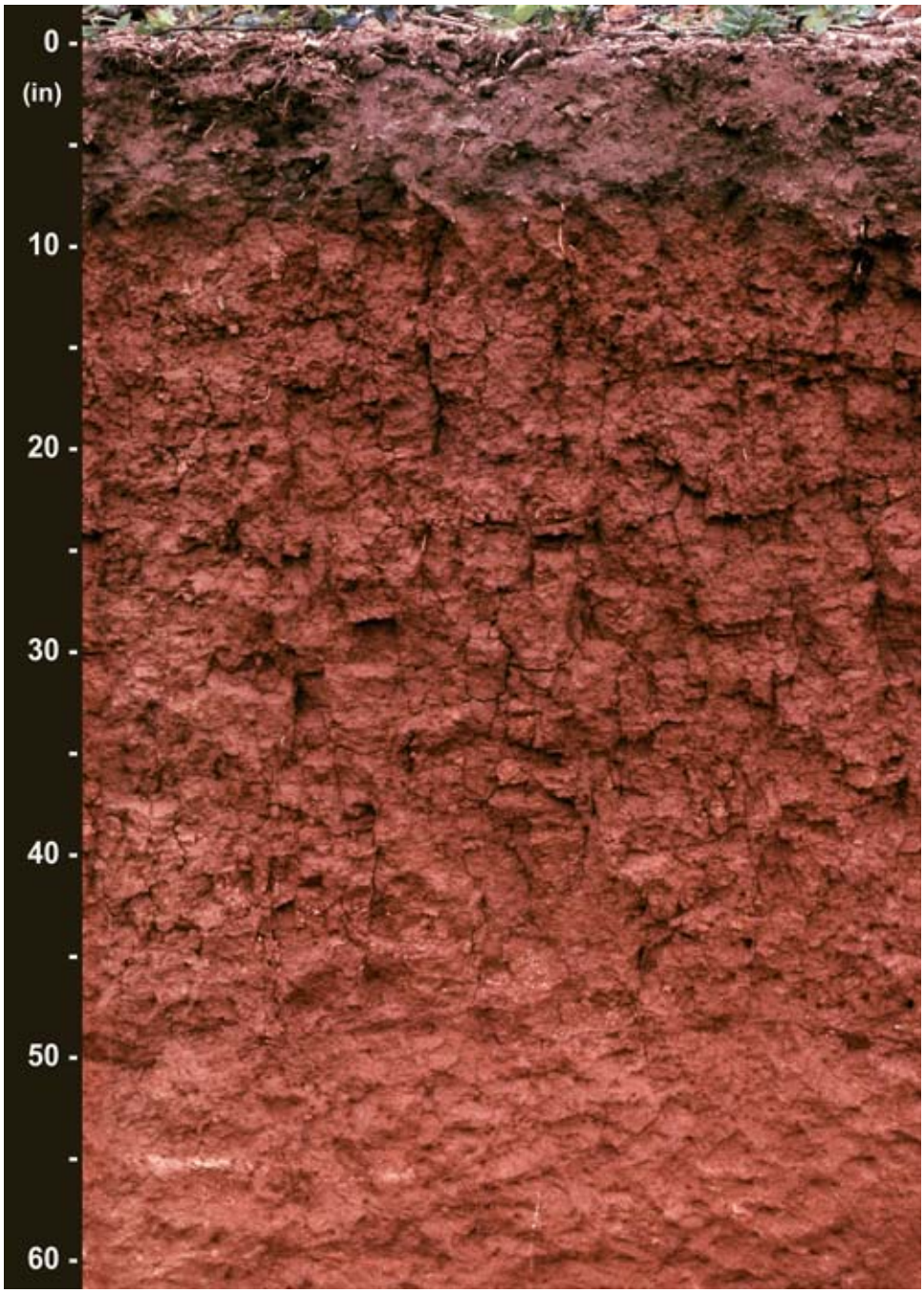

Figure 11.—Profile of a Cecil soil. This deep, well drained upland soil is one of the most common soils in the Piedmont of Georgia. It is well suited to a variety of land use applications.

A horizon:

Thickness—4 to 8 inches
Color—hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 3 to 6
Texture—sandy loam or sandy clay loam

BA horizon (where present):
Color—2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 or 6
Texture—sandy clay loam or clay loam

Bt horizon (upper part):
Color—hue of 10R to 5YR, value of 4 or 5, and chroma of 6 or 8
Texture—sandy clay or clay

Bt horizon (lower part):
Color—hue of 2.5YR, value of 4 or 5, and chroma of 6 or 8
Texture—sandy clay or clay
Mottles—shades of red, brown, and yellow

BC horizon (where present):
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8
Texture—sandy clay loam
Mottles—shades of brown and yellow

C horizon (where present):
Color—multicolored in shades of red, brown, and yellow
Texture—sandy loam or sandy clay loam saprolite

Chewacla Series

Depth class: Very deep
Agricultural drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Seasonal high water table: 0.5 to 2.0 feet; apparent
Landform: Flood plains
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts

Geographically Associated Soils

- Toccoa soils, which are coarse-loamy and are moderately well drained or well drained
- Wehadkee soils, which are very poorly drained or poorly drained

Typical Pedon

Butts County, Georgia; 2,000 feet northeast of bridge at Watson Creek and Georgia Highway 42; 7.5-minute USGS topographic quadrangle, Jackson, GA (1985); lat. 33 degrees 18 minutes 27 seconds N. and long. 83 degrees 58 minutes 28 seconds W.

A—0 to 6 inches; dark brown (7.5YR 3/3) loam; weak fine granular structure; very friable; many fine roots; common fine flakes of mica; strongly acid; clear smooth boundary.

Bw1—6 to 14 inches; brown (7.5YR 4/4) clay loam; weak fine subangular blocky structure; friable; common fine roots; few fine flakes of mica; moderately acid; gradual wavy boundary.

Bw2—14 to 25 inches; brown (7.5YR 4/3) clay loam; weak fine subangular blocky structure; friable; few fine roots; common medium faint brown (7.5YR 5/2) iron depletions; common fine flakes of mica; strongly acid; clear wavy boundary.

Bg—25 to 30 inches; very dark grayish brown (10YR 3/2) clay loam; weak medium subangular blocky structure; friable; few fine roots; many fine prominent yellowish red (5YR 5/6) masses of oxidized iron; strongly acid; clear wavy boundary.

BCg—30 to 40 inches; very dark gray (N 3/) sandy clay loam; massive; very friable; strongly acid; clear wavy boundary.
Cg—40 to 60 inches; gray (10YR 5/1) sandy clay loam that has pockets of sandy clay material; massive; friable; strongly acid.

Range in Characteristics

Thickness of the solum: 22 to 48 inches
Reaction: Very strongly acid to slightly acid

A horizon:
Thickness—4 to 8 inches
Color—hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 to 4
Texture—sandy loam, loam, silt loam, or clay loam

Bw horizon:
Color—hue of 5YR to 10YR, value of 4, and chroma of 3 to 6
Texture—sandy clay loam, loam, silty clay loam, or clay loam
Redoximorphic features—iron depletions in shades of gray and brown and masses of oxidized iron in shades of brown

Bg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2
Texture—sandy clay loam, loam, or clay loam
Redoximorphic features—masses of oxidized iron in shades of brown

BC horizon (where present):
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture—fine sandy loam, sandy clay loam, or loam

BCg horizon (where present):
Color—neutral in hue or hue of 10YR; value of 4 and chroma of 1 or 2
Texture—sandy clay loam or clay loam

Cg horizon:
Color—neutral in hue or hue of 10YR or 2.5Y; value of 4 to 7 and chroma of 1 or 2
Texture—loamy sand, sandy loam, sandy clay loam, silty clay loam, sandy clay, silty clay, or clay

Hard Labor Series

Depth class: Very deep
Agricultural drainage class: Moderately well drained
Permeability: Slow
Parent material: Residuum from felsic crystalline rock
Seasonal high water table: 2.5 to 3.3 feet; perched
Landform: Hills
Slope range: 2 to 6 percent
Taxonomic class: Fine, kaolinitic, thermic Oxyaquic Kanhapludults (fig. 12)

Geographically Associated Soils

- Cataula soils, which have a red subsoil
- Cecil and Pacolet soils, which have a red subsoil and are well drained
- Bush River and Prosperity soils, which have mixed mineralogy and have a seasonal high water table at a depth of 1.5 to 2.5 feet

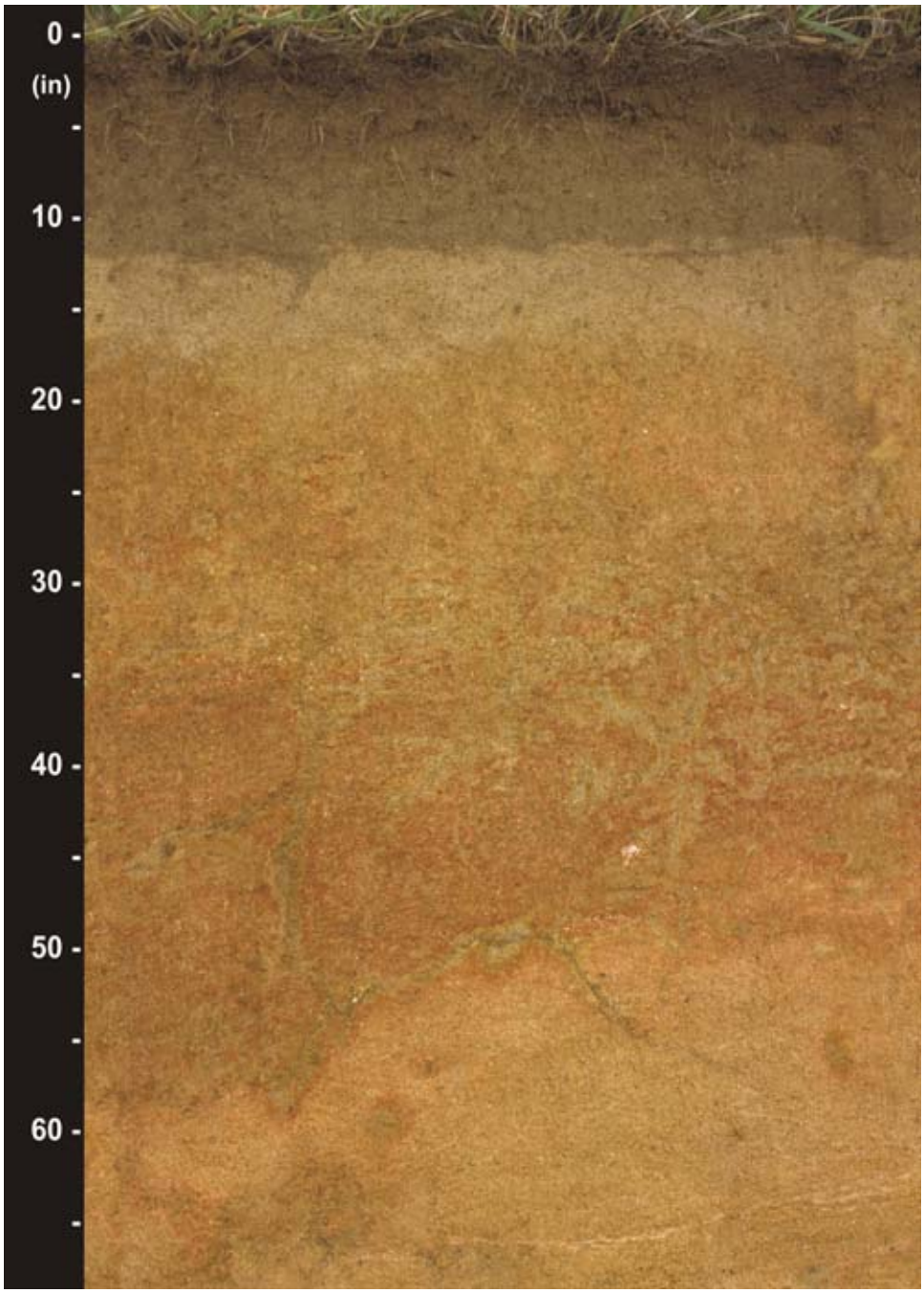

Figure 12.—Profile of a Hard Labor soil. This soil generally has a perched water table at a depth of 30 to 40 inches, as indicated by the gray iron depletions. It generally is located on the toeslope of the landscape.

Typical Pedon

Butts County, Georgia; 2.8 miles north of Jackson, Georgia, on Georgia Highway 36 to Old Bethel Road, 1,000 feet southwest into open field; 7.5-minute USGS topographic quadrangle, Jackson, GA (1985); lat. 33 degrees 19 minutes 55 seconds N. and long. 83 degrees 58 minutes 01 second W.

Ap—0 to 9 inches; dark brown (10YR 3/3) sandy loam; weak medium granular structure; very friable; many fine and few medium roots; strongly acid; clear smooth boundary.

BE—9 to 15 inches; yellowish brown (10YR 5/4) sandy clay loam; weak medium granular structure; friable; common fine roots; strongly acid; clear smooth boundary.

Bt1—15 to 26 inches; yellowish brown (10YR 5/8) sandy clay; weak medium subangular blocky structure; firm; few fine roots; strongly acid; gradual wavy boundary.

Bt2—26 to 36 inches; yellowish brown (10YR 5/6) clay; weak medium subangular blocky structure; firm; common medium prominent red (2.5YR 4/6) masses of oxidized iron; strongly acid; gradual wavy boundary.

Bt3—36 to 50 inches; 35 percent yellowish brown (10YR 5/6) and 35 percent red (2.5YR 4/6) sandy clay; moderate medium platy structure; firm; 30 percent light brownish gray (10YR 6/2) iron depletions; strongly acid; gradual wavy boundary.

BC—50 to 60 inches; 40 percent yellowish brown (10YR 5/8) and 40 percent red (2.5YR 4/6) sandy clay; moderate medium platy structure; firm; 20 percent very pale brown (10YR 7/3) iron depletions; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches or more
Reaction: Very strongly acid or strongly acid

A or Ap horizon:
Thickness—3 to 9 inches
Color—hue of 10YR, value of 3 or 4, and chroma of 3 or 4
Texture—sandy loam or sandy clay loam

E horizon (where present):
Color—hue of 10YR, value of 4 to 6, and chroma of 4
Texture—sandy loam

BE horizon:
Color—hue of 10YR, value of 5, and chroma of 4
Texture—sandy loam or sandy clay loam

Bt horizon (upper part):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 6 or 8
Texture—sandy clay or clay
Redoximorphic features—masses of oxidized iron in shades of brown in some pedons

Bt horizon (lower part):
Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 6 or 8
Texture—sandy clay or clay
Redoximorphic features—iron depletions in shades of brown and gray and masses of oxidized iron in shades of red and brown

BC horizon:
Color—hue of 2.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8; or multicolored
Texture—sandy clay loam or sandy clay
Redoximorphic features—iron depletions in shades of brown and gray and masses of oxidized iron in shades of brown

C horizon (where present):
Color—multicolored in shades of red, brown, and yellow

Texture—sandy loam saprolite
Redoximorphic features—iron depletions in shades of brown and gray and masses of oxidized iron in shades of brown

Hiwassee Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Old alluvium from felsic and mafic rock
Landform: Stream terraces
Slope range: 0 to 4 percent
Taxonomic class: Fine, kaolinitic, thermic Rhodic Kanhapludults

Geographically Associated Soils

- Cecil, Madison, and Pacolet soils, which do not have a dark red upper subsoil
- Lloyd soils that are on adjacent hills

Typical Pedon

Monroe County, Georgia; 0.7 mile west of Juliette, Georgia, on Juliette Road, 2.26 miles north on Georgia Highway 87/U.S. Highway 23, about 0.43 mile north on Elbert Jackson Road, 2,730 feet east of road; 7.5-minute USGS topographic quadrangle, Berner, GA (1981); lat. 33 degrees 08 minutes 21 seconds N. and long 83 degrees 49 minutes 26 seconds W.

Ap—0 to 7 inches; dark reddish brown (5YR 3/4) sandy loam; weak fine granular structure; very friable; many very fine roots throughout; slightly acid; clear smooth boundary.

Bt1—7 to 20 inches; dark reddish brown (2.5YR 3/4) clay; moderate fine to medium subangular blocky structure; firm; moderately sticky, moderately plastic; few very fine roots between peds; many distinct clay films on face of peds; slightly acid; clear smooth boundary.

Bt2—20 to 37 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm; moderately sticky, moderately plastic; few very fine roots between peds; common fine distinct spherical manganese masses; many distinct clay films on faces of peds; slightly acid; clear smooth boundary.

Bt3—37 to 50 inches; red (2.5YR 4/6) clay; common medium prominent light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; firm; moderately sticky, moderately plastic; moderately acid; gradual wavy boundary.

Bt4—50 to 60 inches; red (2.5YR 4/6) clay; common medium prominent very pale brown (10YR 7/3) and few medium prominent light yellowish brown (10YR 6/4) irregular mottles; weak medium subangular blocky structure; firm; moderately sticky, moderately plastic; few very fine mica flakes; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches or more
Reaction: Very strongly acid to slightly acid

A or Ap horizon:
Thickness—4 to 10 inches
Color—hue of 2.5YR to 7.5YR, value of 3, and chroma of 2 to 6
Texture—sandy loam or loam

Bt horizon (upper part):
Color—hue of 10R or 2.5YR, value of 3, and chroma of 4 or 6
Texture—sandy clay, clay loam, or clay

Bt horizon (lower part):
Color—hue of 10R or 2.5YR, value of 4, and chroma of 4 or 6
Texture—sandy clay or clay
Mottles—shades of brown and yellow in some pedons

BC horizon (where present):
Color—similar to colors of the lower Bt horizon
Texture—clay loam or sandy clay loam

C horizon (where present):
Color—hue of 10R or 2.5YR, value of 3 or 4, and chroma of 6 or 8; or multicolored in shades of red, brown, and yellow
Texture—loam, sandy clay loam, or clay loam
Mottles—shades of brown and yellow in some pedons

Lloyd Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Residuum from hornblende gneiss
Landform: Hills
Slope range: 2 to 30 percent
Taxonomic class: Fine, kaolinitic, thermic Rhodic Kanhapludults (fig. 13)

Geographically Associated Soils

- Cecil, Madison, and Pacolet soils, which do not have a dark red upper subsoil

Typical Pedon

Monroe County, Georgia; 6.9 miles east of I-20 ramp in Forsyth, GA, on Georgia Highway 18 to Holly Grove Cemetery, 1,100 feet south-southeast of Holly Grove Cemetery in cutover timberland; 7.5-minute USGS topographic quadrangle, East Juliette, GA (1973); lat. 33 degrees 01 minute 30 seconds N. long. 83 degrees 47 minutes 36 seconds W.

A—0 to 4 inches; dark reddish brown (5YR 3/4) sandy clay loam; weak fine granular structure; very friable; many fine and very fine roots; many fine and very fine irregular pores; common distinct manganese masses: moderately acid; clear smooth boundary.

Bt1—4 to 30 inches; dark red (2.5YR 3/6) clay; weak fine subangular blocky structure; firm; common fine and very fine roots; common fine and very fine irregular pores; common prominent manganese masses; moderately acid; gradual wavy boundary.

Bt2—30 to 48 inches; reddish brown (2.5YR 4/4) sandy clay; weak medium subangular blocky structure; friable; few fine and very fine irregular pores; many prominent manganese masses; common faint very fine mica flakes; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

BC—48 to 60 inches; red (2.5YR 4/8) sandy clay; weak fine subangular blocky structure; very friable; many distinct manganese masses; strongly acid; gradual wavy boundary.

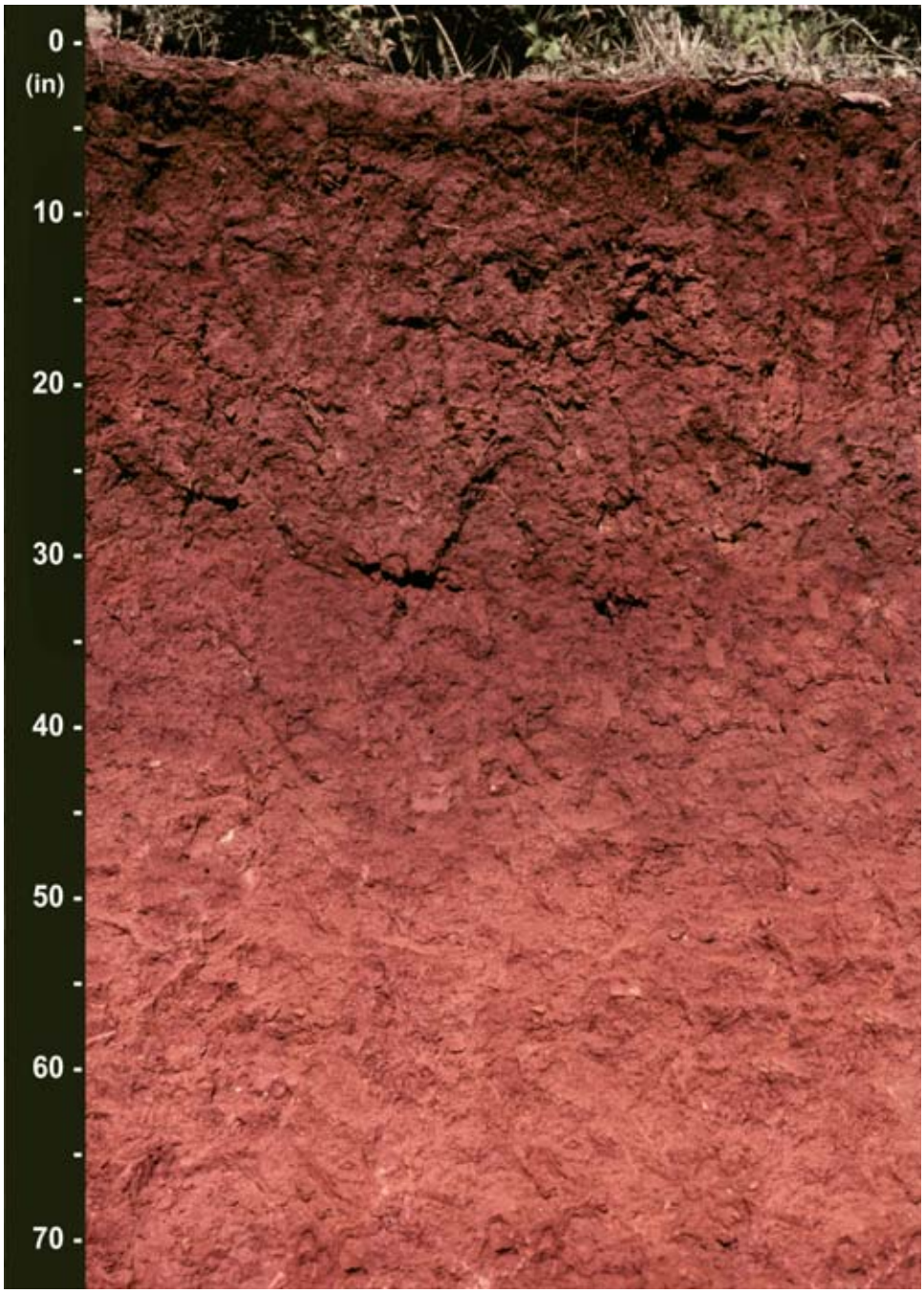

Figure 13.—Profile of a Lloyd soil. This well drained soil is an old soil that is characterized by its deep, well developed, clayey subsoil horizons and dark red (rhodic) color.

Range in Characteristics

Thickness of the solum: 40 to 60 inches or more
Reaction: Very strongly acid to slightly acid

A horizon:
Thickness—4 to 10 inches

Color—hue of 2.5YR, value of 3 or 4, and chroma of 2 to 6
Texture—sandy loam or sandy clay loam

Bt horizon (upper part):
Color—hue of 10R or 2.5YR, value of 3, and chroma of 4 or 6
Texture—sandy clay, clay loam, or clay

Bt horizon (lower part):
Color—hue of 10R or 2.5YR, value of 4, and chroma of 4 to 8
Texture—sandy clay or clay
Mottles—shades of brown and yellow in some pedons

BC horizon:
Color—similar to colors of the lower Bt horizon
Texture—clay loam or sandy clay loam

C horizon (where present):
Color—hue of 10R or 2.5YR, value of 3 or 4, and chroma of 6 or 8; or multicolored in shades of red, brown, and yellow
Texture—loam, sandy clay loam, or clay loam saprolite
Mottles—shades of brown and yellow in some pedons

Madison Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Residuum from mica schist or mica gneiss
Landform: Hills
Slope range: 2 to 30 percent
Taxonomic class: Fine, kaolinitic, thermic Typic Kanhapludults (fig. 14)

Geographically Associated Soils

- Pacolet and Cecil soils, which do not have as many mica flakes in the lower part of the solum as the Madison soils
- Saw soils, which are moderately deep
- Wilkes soils, which are shallow and have mixed mineralogy
- Wynott soils, which are moderately deep and have mixed mineralogy
- Winnsboro soils, which have mixed mineralogy

Typical Pedon

Monroe County, Georgia; 0.48 mile east of I-475 ramp in Bolingbroke, Georgia, on Georgia Highway 41, about 4.18 miles south on Estes Road, 2.8 miles west on Old Zebulon Road, 1.1 miles south of road; 7.5-minute USGS topographic quadrangle, Bolingbroke, GA (1985); lat. 32 degrees 53 minutes 25 seconds N. and long. 83 degrees 52 minutes 04 seconds W.

A—0 to 5 inches; reddish brown (5YR 4/4) sandy clay loam; weak fine subangular blocky structure; very friable; many fine and very fine roots; few medium roots; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt—5 to 20 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common fine flakes of mica; strongly acid; gradual wavy boundary.

BC—20 to 30 inches; red (2.5YR 4/8) clay loam; weak fine subangular blocky structure; very friable; common fine and very fine flakes of mica; strongly acid; gradual wavy boundary.

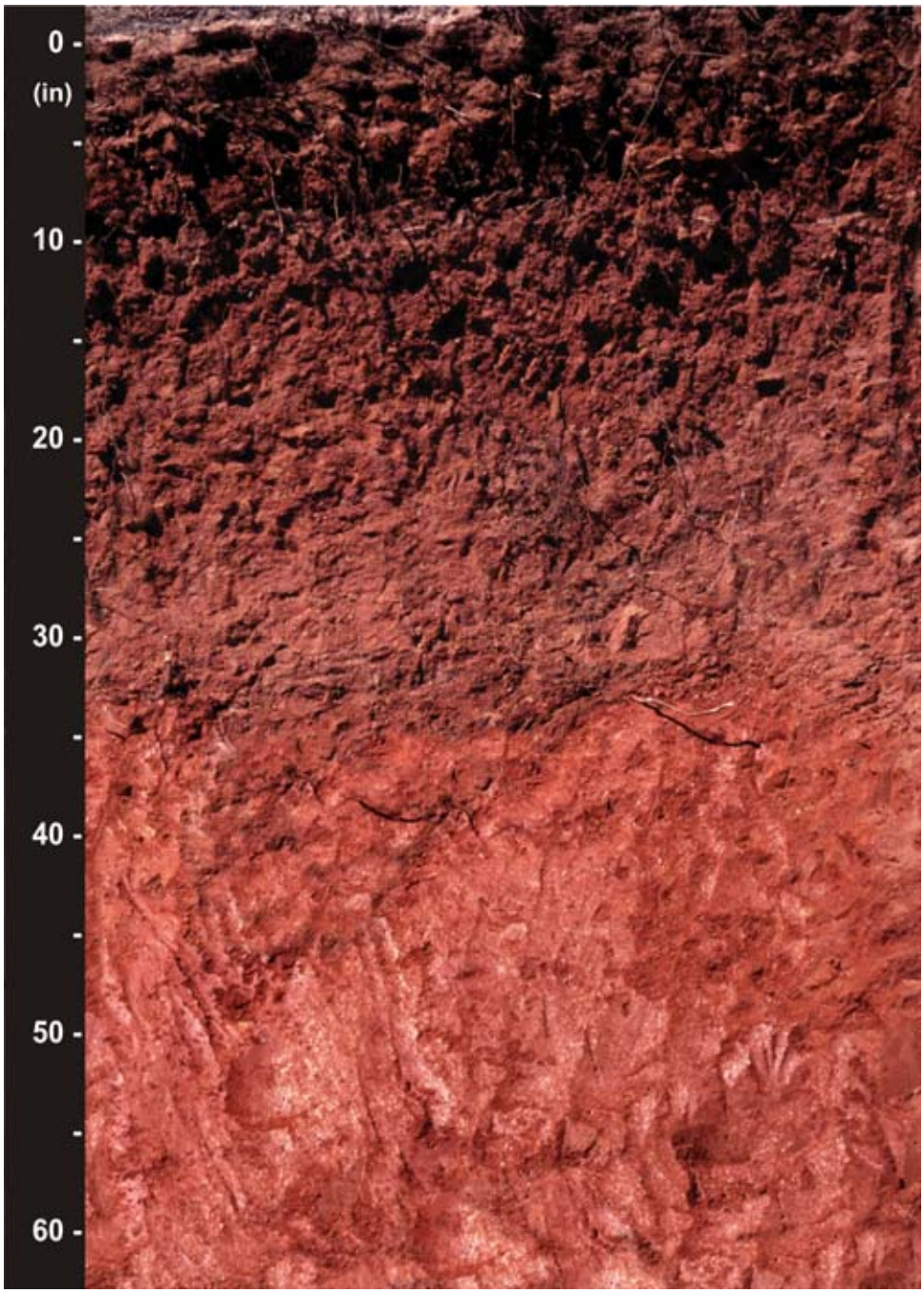

Figure 14.—Profile of a Madison soil. This deep, well drained soil is characterized by a high content of mica, which is a result of weathering from mica gneiss and mica schist.

C1—30 to 50 inches; red (2.5YR 4/8) loam saprolite; massive; very friable; many fine and very fine flakes of mica; strongly acid; gradual wavy boundary.

C2—50 to 60 inches; yellowish red (5YR 5/6) sandy loam saprolite; massive; very friable; many fine and very fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 50 inches
Reaction: Very strongly acid or strongly acid
Content of mica flakes: Common to many in the upper horizons; many in the lower part of the solum

A horizon:
Thickness—1 to 8 inches
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 6
Texture—sandy loam or sandy clay loam

BA or BE horizon (where present):
Color—hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 3 to 8
Texture—sandy clay loam or sandy loam

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 4, and chroma of 6 or 8
Texture—sandy clay or clay
Mottles—shades of red and brown in some subhorizons

BC horizon:
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8; or multicolored in shades of red and brown
Texture—sandy clay loam or sandy loam
Mottles—shades of red, brown, and yellow

C horizon:
Color—hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8
Texture—sandy loam or sandy clay loam saprolite
Mottles—shades of brown

Mecklenburg Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Slow
Parent material: Residuum from intermediate and mafic crystalline rock
Landform: Hills
Slope range: 6 to 15 percent
Taxonomic class: Fine, mixed, active, thermic, Ultic Hapludalfs

Geographically Associated Soils

- Lloyd soils, which do not have a sticky and plastic subsoil
- Cecil and Pacolet soils, which have a base saturation of less than 35 percent
- Wilkes soils, which are shallow to bedrock
- Winnsboro soils, which do not have a reddish subsoil

Typical Pedon

Monroe County, Georgia; 1.45 miles west of Juliette, Georgia, on Juliette Road, 0.7 mile north on Newton Road, 1,128 feet west of road; 7.5-minute USGS topographic quadrangle, East Juliette, GA (1973); lat. 33 degrees 06 minutes 44 seconds N. and long. 83 degrees 49 minutes 34 seconds W.

A—0 to 6 inches; dark brown (7.5YR 3/3) sandy loam; weak fine granular structure; very friable; moderately acid; clear smooth boundary.

BA—6 to 12 inches; reddish brown (5YR 4/4) sandy clay loam; weak fine subangular blocky structure; very friable; moderately acid; clear smooth boundary.

Bt1—12 to 23 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; very sticky, very plastic; common fine manganese masses; common fine manganese concretions; moderately acid; gradual wavy boundary.

Bt2—23 to 42 inches; yellowish red (5YR 5/6) clay; weak medium subangular blocky structure; friable; moderately sticky, moderately plastic; many medium manganese masses; many very fine flakes of mica; moderately acid; gradual wavy boundary.

C—42 to 60 inches; strong brown (7.5YR 4/6) sandy clay loam saprolite; common medium distinct strong brown (7.5YR 5/8) and common fine distinct dark brown (7.5YR 3/2) mottles; massive; friable; neutral.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Reaction: Moderately acid to neutral

A horizon:
Thickness—4 to 8 inches
Color—hue of 2.5YR to 7.5YR, value of 3 or 4, and chroma of 2 to 6
Texture—sandy loam, loam, or sandy clay loam

BA or BE horizon:
Color—hue of 5YR, value of 4 or 5, and chroma of 4 or 6
Texture—sandy clay loam

Bt horizon (upper part):
Color—hue of 5YR, value of 4 or 5, and chroma of 6 or 8
Texture—clay

Bt horizon (lower part):
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8
Texture—sandy clay or clay
Mottles—shades of yellow and brown

BC horizon (where present):
Color—hue of 2.5YR, value of 4, and chroma of 6; or multicolored in shades of red, yellow, pink, and white
Texture—sandy clay loam

C horizon:
Color—multicolored in shades of red, brown, yellow, pink, and white
Texture—sandy loam, sandy clay loam, or clay loam saprolite

Pacolet Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Residuum from felsic crystalline rock
Landform: Hills
Slope range: 2 to 35 percent
Taxonomic class: Fine, kaolinitic, thermic, Typic Kanhapludults

Geographically Associated Soils

- Ashlar and Saw soils, which have hard bedrock at a depth of 23 to 40 inches
- Cecil soils, which have a thicker clayey subsoil than the Pacolet soils

- Madison soils, which have more mica flakes in the lower solum than the Pacolet soils

Typical Pedon

Jasper County, Georgia; 1,500 feet northwest on Georgia Highway 221 from intersection with Georgia Highway 212, about 400 feet north of road; 7.5-minute USGS topographic quadrangle, Stewart, GA (1964); lat. 33 degrees 23 minutes 13 seconds N. and long. 83 degrees 48 minutes 39 seconds W.

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bt1—7 to 20 inches; red (2.5YR 4/6) sandy clay; weak medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—20 to 25 inches; red (2.5YR 4/6) sandy clay; common medium prominent reddish yellow (5YR 6/8) mottles; weak medium subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

BC—25 to 33 inches; red (2.5YR 4/6) sandy clay loam; common medium prominent yellowish red (5YR 5/6) and pink (5YR 8/4) mottles; weak medium subangular blocky structure; friable; few faint clay films on face of peds; common fine flakes of mica; very strongly acid; gradual wavy boundary.

C1—33 to 54 inches; red (2.5YR 4/6), yellowish red (5YR 4/6), and pink (7.5YR 8/3) sandy clay loam saprolite; massive; friable; common fine flakes of mica; very strongly acid; gradual wavy boundary.

C2—54 to 60 inches; red (2.5YR 4/6), yellowish red (5YR 4/6), and very pale brown (10YR 8/4) sandy loam saprolite; massive; friable; many fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 24 to 40 inches
Reaction: Very strongly acid or strongly acid

A or Ap horizon:
Thickness—2 to 10 inches
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 4
Texture—sandy loam or sandy clay loam

BA or BE horizon (where present):
Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 or 6
Texture—sandy clay loam

Bt horizon (upper part):
Color—hue of 2.5YR, value of 4, and chroma of 6 or 8
Texture—sandy clay or clay

Bt horizon (lower part):
Color—hue of 2.5YR, value of 4, and chroma of 6 or 8
Texture—sandy clay or clay
Mottles—shades of yellow and brown

BC horizon:
Color—hue of 2.5YR, value of 4, and chroma of 6; or multicolored in shades of red, yellow, pink, and white
Texture—sandy clay loam

C horizon:
Color—multicolored in shades of red, brown, yellow, pink, and white
Texture—sandy loam, sandy clay loam, or clay loam saprolite

Prosperity Series

Depth class: Moderately deep
Agricultural drainage class: Moderately well drained
Permeability: Slow
Parent material: Residuum from mixed felsic, intermediate, or mafic igneous rock
Seasonal high water table: 1.5 to 2.5 feet; perched
Landform: Hills
Slope range: 6 to 25 percent
Taxonomic class: Fine, mixed, semiactive, thermic Aquic Hapludults

Geographically Associated Soils

- Bush River soils, which have a depth to paralithic contact of 40 to 60 inches
- Hard Labor soils, which are Oxyaquic and are intermingled in some areas
- Pacolet soils, which have a redder subsoil than the Prosperity soil and are well drained
- Cecil soils, which have a dominant red color in the subsoil and are well drained

Typical Pedon

Monroe County, Georgia; 12.2 miles south of Forsyth, Georgia, on Georgia Highway 42, about 4.25 miles east on Georgia Highway 74, about 1,510 feet north into cutover timberland; 7.5-minute USGS topographic quadrangle, Smarr, GA (1974); lat. 32 degrees 53 minutes 09 seconds N. and long. 83 degrees 55 minutes 57 seconds W.

A—0 to 3 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; loose; few irregular gravels; many fine and common medium roots; many very fine pores; moderately acid; clear smooth boundary.

E—3 to 6 inches; yellowish brown (10YR 5/6) sandy loam; weak fine granular structure; loose; few irregular gravels; common fine and few medium roots; moderately acid; gradual wavy boundary.

Bt1—6 to 15 inches; yellowish red (5YR 5/6) sandy clay; moderate medium subangular blocky structure; friable; moderately sticky, moderately plastic; common fine and few medium roots; common fine pores; few faint strong brown clay films (7.5YR 4/6) on faces of peds; common fine prominent light reddish brown (2.5YR 6/3) iron depletions; common fine prominent red (2.5YR 4/8) masses of oxidized iron; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt2—15 to 25 inches; strong brown (7.5YR 5/6) sandy clay; moderate medium platy to moderate medium subangular blocky structure; friable; moderately sticky, moderately plastic; few fine roots; few fine pores; few faint strong brown clay films (7.5YR 5/6) on faces of horizontal peds; common fine prominent light reddish brown (2.5YR 7/3) iron depletions; common fine prominent red (2.5YR 5/6) masses of oxidized iron; common fine flakes of mica; strongly acid; clear smooth boundary.

Bt3—25 to 35 inches; yellowish brown (10YR 5/6) sandy clay; moderate medium subangular blocky structure; firm; moderately sticky, moderately plastic; few fine roots; few fine pores; few prominent light brownish gray (10YR 6/2) and few faint yellowish brown (10YR 5/6) clay films on faces of peds; few fine prominent gray (10YR 6/1) and many medium prominent light gray (10YR 7/1) iron depletions; many medium prominent yellowish red (5YR 5/8) masses of oxidized iron; many fine flakes of mica; very strongly acid; clear wavy boundary.

Cr—35 to 60 inches—weathered, highly fractured bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches or more
Reaction: Very strongly acid or strongly acid

A horizon:
Thickness—2 to 5 inches
Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 4
Texture—sandy loam or sandy clay loam

E horizon (where present):
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6
Texture—sandy loam

BA or BE horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture—sandy clay loam

Bt horizon:
Color—hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8
Texture—sandy clay or clay

BC or CB horizon (where present):
Color—hue of 5YR to 2.5Y, value of 5, and chroma of 4 or 6; or multicolored in shades of red, yellow, and brown
Texture—sandy loam or sandy clay loam

C horizon (where present):
Color—hue of 5YR to 2.5Y, value of 5 or 6, and chroma of 4 or 6; or multicolored in shades of red, yellow, and brown
Texture—sandy loam or sandy clay loam saprolite

Cr horizon:
Type of bedrock—weathered mixed felsic, intermediate, and mafic igneous rock

Riverview Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Loamy alluvium
Seasonal high water table: 3.0 to 5.0 feet; apparent
Landform: Flood plains
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, active, thermic Oxyaquic Dystrudepts

Geographically Associated Soils

- Buncombe soils, which are coarse-loamy and are in the slightly higher landscape positions
- Chewacla soils, which are somewhat poorly drained
- Wehadkee soils, which are poorly drained or very poorly drained and are in the slightly lower landscape positions

Typical Pedon

Monroe County, Georgia; 11.38 miles north of Forsyth, Georgia, on Georgia Highway 83, just west of county line, 940 feet north of road in open field; 7.5-minute USGS topographic quadrangle, Berner, GA (1973); lat. 33 degrees 09 minutes 38 seconds N. and long. 83 degrees 49 minutes 33 seconds W.

A—0 to 6 inches; dark brown (7.5YR 3/3) loam; weak fine granular structure; friable; many very fine roots throughout; slightly acid; clear smooth boundary.

Bw1—6 to 16 inches; dark yellowish brown (10YR 3/4) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common very fine mica flakes; moderately acid; gradual wavy boundary.

Bw2—16 to 32 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct brown (7.5YR 4/3) clay films on faces of peds; common very fine mica flakes; moderately acid; gradual wavy boundary.

Bw3—32 to 45 inches; strong brown (7.5YR 4/6) clay loam; moderate medium subangular blocky structure; firm; few very fine roots; few faint strong brown (7.5YR 4/6) clay films on faces of peds; common very fine mica flakes; moderately acid; gradual wavy boundary.

BC—45 or 60 inches; strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; firm; few very fine roots between peds; common fine pale brown (10YR 6/3) iron depletions along root channels; many very fine mica flakes; few fine manganese masses; strongly acid.

Range in Characteristics

Thickness of the solum: 28 to 60 inches
Reaction: Strongly acid to slightly acid

A horizon:
Thickness—3 to 9 inches
Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 3 to 6
Texture—sandy loam, loam, or silt loam

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6
Texture—clay loam, silty clay loam, or sandy clay loam

BC horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 6
Texture—clay loam or sandy clay loam

C horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4, and chroma of 6
Texture—loamy sand

Saw Series

Depth class: Moderately deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Residuum from granite or granite gneiss
Landform: Hills
Slope range: 6 to 25 percent
Taxonomic class: Fine, kaolinitic, thermic Typic Kanhapludults

Geographically Associated Soils

- Ashlar soils, which are coarse-loamy
- Madison and Pacolet soils, which do not have bedrock within a depth of 60 inches

Typical Pedon

Monroe County, Georgia; 5.55 miles west of Forsyth, GA, on Georgia Highway 18/ U.S. Highway 41, about 1.0 mile south on Parks Road, 0.75 mile west on Potts Cemetery Road, 570 feet north of road on mixed hardwood hillside; 7.5-minute USGS topographic quadrangle, Johnstonville, GA (1973); lat. 33 degrees 01 minute 51 seconds N. and long. 84 degrees 06 minutes 10 seconds W.

A—0 to 4 inches; brown (7.5YR 4/4) sandy loam; weak fine granular structure; very friable; many fine and common very fine roots; few fine flakes of mica; strongly acid; clear smooth boundary.

BA—4 to 10 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; very friable; common fine roots; few fine irregular pores; strongly acid; clear wavy boundary.

Bt—10 to 16 inches; red (2.5YR 4/6) clay; weak medium subangular blocky structure; friable; few medium roots; few fine irregular pores; few fine clay films on faces of peds; strongly acid; clear smooth boundary.

BC—16 to 25 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; very friable; common fine flakes of mica; strongly acid; clear smooth boundary.

C—25 to 31 inches; red (2.5YR 4/8) sandy loam saprolite; massive; very friable; common fine flakes of mica; very strongly acid; clear wavy boundary.

R—31 inches; hard granite gneiss

Range in Characteristics

Thickness of the solum: 20 to 33 inches
Depth to hard bedrock: 20 to 40 inches
Reaction: Very strongly acid or strongly acid

A horizon:
Thickness—4 to 7 inches
Color—hue of 7.5YR or 10YR, value of 4, and chroma of 3 or 4
Texture—sandy loam

E horizon (where present):
Color—hue of 10YR, value of 4 or 5, and chroma of 4 or 6
Texture—sandy loam

BE or BA horizon (where present):
Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture—sandy clay loam or clay loam

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 4, and chroma of 6 or 8
Texture—sandy clay or clay

BC horizon:
Color—hue of 2.5YR, value of 4, and chroma of 6 or 8
Texture—sandy clay loam or sandy loam

C horizon (where present):
Color—hue of 2.5YR, value of 4, and chroma of 6 or 8; or multicolored in shades of red, yellow, and brown

Texture—sandy loam saprolite
Mottles—shades of brown and yellow

R layer:
Type of bedrock—hard granite gneiss

Sedgefield Series

Depth class: Very deep
Agricultural drainage class: Somewhat poorly drained
Permeability: Slow
Parent material: Residuum from intermediate and mafic crystalline rock
Seasonal high water table: 1.0 to 1.5 feet; perched
Landform: Upland
Slope range: 0 to 4 percent
Taxonomic class: Fine, mixed, active, thermic Aquultic Hapludalfs

Geographically Associated Soils

- Wilkes soils, which are well drained and are shallow to soft bedrock
- Winnsboro soils, which are well drained
- Wynott soils, which are well drained and have soft bedrock at a depth of 20 to 40 inches

Typical Pedon

Monroe County, Georgia; 0.7 mile west of Juliette, Georgia, on Juliette Road, 0.92 mile north on Georgia Highway 87/U.S. Highway 23, about 1,125 feet east of road; 7.5-minute USGS topographic quadrangle, East Juliette, GA (1973); lat. 33 degrees 06 minutes 59 seconds N. and long. 83 degrees 49 minutes 02 seconds W.

A—0 to 6 inches; dark olive brown (2.5Y 4/2) sandy loam; weak fine granular structure; very friable; many fine and medium roots throughout; very strongly acid; clear smooth boundary.

E—6 to 11 inches; olive brown (2.5Y 4/4) sandy loam; weak fine granular structure; very friable; few fine and medium roots throughout; strongly acid; abrupt smooth boundary.

BE—11 to 16 inches; olive brown (2.5Y 4/3) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots between peds; few prominent clay films on faces of peds; few fine light gray (10YR 7/2) iron depletions; common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron; slightly acid; gradual wavy boundary.

Bt1—16 to 24 inches; yellowish brown (10YR 5/6) clay; moderate medium angular blocky structure; firm; moderately sticky, moderately plastic; few fine to medium roots between peds; few prominent clay films between peds; many fine light gray (10YR 7/2) iron depletions; common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron; common fine mica flakes; neutral; gradual wavy boundary.

Bt2—24 to 32 inches; yellowish brown (10YR 5/8) clay; weak medium angular blocky structure; firm; moderately sticky, moderately plastic; few fine roots between peds; few prominent clay films between peds; many coarse gray (10YR 6/1) iron depletions; common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron; common fine mica flakes; neutral; gradual wavy boundary.

Btg1—32 to 40 inches; gray (2.5Y 5/1) clay; weak medium angular blocky structure; firm; moderately sticky, moderately plastic; few clay films between peds; many common strong brown (7.5YR 5/8) masses of oxidized iron; common manganese masses and concretions; slightly alkaline; gradual wavy boundary.

Btg2—40 to 50 inches; gray (2.5Y 5/1) clay; weak medium angular blocky structure; firm; moderately sticky, moderately plastic; many fine strong brown (7.5YR 5/8) masses of oxidized iron; few fine gray (2.5Y 6/1) uncoated sand grains; few carbonate masses; moderately alkaline; gradual wavy boundary.

Cg—50 to 60 inches; gray (2.5Y 6/1) sandy clay loam saprolite; massive; firm; moderately sticky, moderately plastic; many medium yellowish brown (10YR 5/6) masses of oxidized iron; few carbonate masses; common manganese masses; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 50 inches

Reaction: Very strongly acid or strongly acid in upper horizons to moderately alkaline in lower horizons

A horizon:
Thickness—4 to 10 inches
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4
Texture—sandy loam or loam

E horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 to 4
Texture—sandy loam

BA or BE horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 3 to 8
Texture—sandy clay loam or clay loam

Bt horizon:
Color—hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 3 to 8
Texture—sandy clay or clay

Btg horizon:
Color—hue of 7.5YR to 5Y, value of 4 to 7, and chroma of 1 or 2
Texture—clay

BCg horizon (where present):
Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Texture—sandy clay or sandy clay loam

BC horizon (where present):
Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 3 to 8
Texture—sandy clay

C horizon (where present):
Color—multicolored in shades of brown, yellow, red, and gray
Texture—sandy loam, sandy clay loam, or sandy clay saprolite

Cg horizon (where present):
Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Texture—sandy clay or sandy clay loam saprolite

Toccoa Series

Depth class: Very deep
Agricultural drainage class: Moderately well drained or well drained
Permeability: Moderately rapid
Parent material: Alluvium
Seasonal high water table: 3.3 to 5.0 feet; apparent

Landform: Flood plains
Slope range: 0 to 2 percent
Taxonomic class: Coarse-loamy, mixed, active, nonacid, thermic Typic Udifluvents

Geographically Associated Soils

- Buncombe soils, which are sandy throughout
- Chewacla soils that are fine-loamy and have gray iron depletions within 24 inches of the surface

Typical Pedon

Jasper County, Georgia; 4.5 miles northwest of Monticello, Georgia, on Georgia Highway 212, about 1.3 miles southwest on county road, 200 feet north-northwest of road; 7.5-minute USGS topographic quadrangle, Lloyd Shoals Dam, GA (1964); lat. 33 degrees 21 minutes 50 seconds N. and long. 83 degrees 48 minutes 54 seconds W.

A—0 to 4 inches; brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; many fine flakes of mica; strongly acid; clear smooth boundary.

C1—4 to 22 inches; strong brown (7.5YR 4/6) sandy loam; massive; very friable; few medium roots; many fine flakes of mica; strongly acid; gradual wavy boundary.

C2—22 to 35 inches; yellowish red (5YR 4/6) sandy loam; massive; very friable; few fine and medium roots; many fine flakes of mica; strongly acid; gradual wavy boundary.

C3—35 to 43 inches; yellowish red (5YR 4/6) loamy sand; thin strata of strong brown (7.5YR 4/6) loam; massive; very friable; many fine flakes of mica; moderately acid; clear wavy boundary.

C4—43 to 57 inches; yellowish red (5YR 4/6) sandy loam; massive; very friable; moderately acid; clear wavy boundary.

C5—57 to 60 inches; 45 percent strong brown (7.5YR 4/6) loam; massive; friable; 15 percent brown (10YR 5/3) iron depletions; 40 percent dark yellowish brown (10YR 4/4) masses of oxidized iron; strongly acid.

Range in Characteristics

Reaction: Strongly acid to slightly acid; moderately acid or slightly acid in some subhorizons between a depth of 10 to 40 inches

Other distinctive features: Bedding planes and thin strata of sandy or loamy material that occur throughout the C horizons

A horizon:
Thickness—4 to 8 inches
Color—hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 to 4
Texture—fine sandy loam, sandy loam, or loam

C horizon (upper part):
Color—hue of 5YR to 10YR, value of 3 to 6, and chroma of 4 to 8
Texture—fine sandy loam or sandy loam; may have thin strata of contrasting texture

C horizon (lower part):
Color—hue of 5YR to 10YR, value of 3 to 6, and chroma of 4 to 8
Texture—loamy sand, fine sandy loam, sandy loam, or loam; may have thin strata of contrasting texture
Redoximorphic features (where present)—iron depletions in shades of brown and gray

Towaliga Series

Depth class: Very deep
Agricultural drainage class: Well drained
Permeability: Moderate
Parent material: Loamy colluvium from mylonite or flinty, crushed rock over residuum from felsic crystalline rock
Landform: Hills
Slope range: 10 to 35 percent
Taxonomic class: Fine, kaolinitic, thermic Typic Hapludults

Geographically Associated Soils

- Bethlehem soils, which have soft bedrock at a depth of 20 to 40 inches
- Pacolet soils, which do not have a significant amount of fragments throughout the upper solum

Typical Pedon

Butts County, Georgia; located about 1,800 feet south of Georgia Highway 16 at Yellow Water Creek bridge; 7.5-minute USGS topographic quadrangle, Lloyd Shoals Dam, GA (1985); lat. 33 degrees 17 minutes 52 seconds N. and long. 83 degrees 51 minutes 04 seconds W.

A—0 to 3 inches; dark brown (10YR 3/3) extremely gravelly loam; weak fine granular structure; very friable; many fine and very fine roots; 70 percent quartz gravel; very strongly acid; clear smooth boundary.

BA—3 to 11 inches; yellowish brown (10YR 5/4) very gravelly loam; weak fine granular structure; very friable; common fine and few coarse roots; 40 percent quartz gravel and 10 percent quartz cobbles; very strongly acid; clear wavy boundary.

Bw1—11 to 21 inches; strong brown (7.5YR 5/6) very gravelly sandy loam; weak fine subangular blocky structure; friable; few coarse roots; 35 percent quartz gravel and 20 percent quartz cobbles; very strongly acid; gradual wavy boundary.

Bw2—21 to 33 inches; strong brown (7.5YR 5/8) very gravelly sandy loam; weak fine subangular blocky structure; friable; few medium roots; 35 percent quartz gravel and 10 percent quartz cobbles; very strongly acid; clear wavy boundary.

2Bt—33 to 48 inches; yellowish red (5YR 5/8) clay; few fine prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

2BC—48 to 65 inches; yellowish red (5YR 5/8) clay loam; many medium distinct strong brown (7.5YR 5/8) and common fine prominent very pale brown (10YR 8/4) mottles; weak medium subangular blocky structure; firm; common distinct clay films on faces of peds; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Content and size of coarse fragments: 35 to 75 percent gravel and cobbles in the A and BA horizons; 15 to 75 percent gravel and cobbles in the Bw horizons; and 0 to 15 percent gravel and cobbles in the Bt and BC horizons
Reaction: Very strongly acid or strongly acid

A horizon:
Thickness—2 to 6 inches
Color—hue of 10YR, value of 3, and chroma of 1 to 3
Texture (fine-earth fraction)—loam, sandy loam, or silt loam

BA or Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 8
Texture (fine-earth fraction)—sandy loam, sandy clay loam, loam, or silt loam

2Bt horizon:
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8
Texture (fine-earth fraction)—clay loam, sandy clay, or clay
Mottles—shades of yellow and brown

2BC horizon (where present):
Color—similar to the 2Bt horizon
Texture (fine-earth fraction)—sandy clay loam or clay loam
Mottles—shades of yellow, brown, and pink

Wake Series

Depth class: Shallow
Agricultural drainage class: Excessively drained
Permeability: Rapid
Parent material: Residuum from granite and granite gneiss
Landform: Hills
Slope range: 2 to 25 percent
Taxonomic class: Mixed, thermic Lithic Udipsamments

Geographically Associated Soils

- Ashlar soils, which have hard bedrock at a depth of 23 to 40 inches
- Pacolet and Saw soils, which have a fine particle-size control section

Typical Pedon

Butts County, Georgia; 2.75 miles southeast of Jackson, Georgia, on Georgia Highway 42 to Higgins Road, 0.75 mile northeast on Higgins Road across Plymale Creek to pipeline, follow pipeline 700 feet west-southwest, northwest of pipeline and northeast of creek; 7.5-minute USGS topographic quadrangle, Jackson, GA (1964); lat. 33 degrees 16 minutes 19 seconds N. and long. 83 degrees 54 minutes 16 seconds W.

A—0 to 4 inches; dark brown (7.5YR 3/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.
C—4 to 14 inches; brown (7.5YR 4/4) loamy sand; single grained; very friable; common fine and medium roots; strongly acid; clear wavy boundary.
R—14 inches; hard granite gneiss.

Range in Characteristics

Thickness of the solum: 4 to 17 inches
Depth to hard bedrock: 11 to 19 inches
Content and size of coarse fragments: 0 to 15 percent gravel and cobbles throughout
Reaction: Very strongly acid to moderately acid

A horizon:
Thickness—3 to 6 inches
Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 4
Texture—loamy sand

C horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 or 6; or multicolored
Texture—loamy sand, sandy loam, or coarse sandy loam saprolite

Cr horizon (where present):
Type of bedrock—weathered granite or granite gneiss

R layer:
Type of bedrock—unweathered igneous or high-grade metamorphic rock

Wehadkee Series

Depth class: Very deep
Agricultural drainage class: Poorly drained or very poorly drained
Permeability: Moderate
Parent material: Alluvium
Seasonal high water table: 0 to 1.0 foot; apparent
Landform: Flood plains
Slope range: 0 to 1 percent
Taxonomic class: Fine-loamy, mixed, active, nonacid, thermic Fluvaquentic Endoaquepts

Geographically Associated Soils

- Chewacla soils in the higher positions on flood plains
- Toccoa soils near natural stream levees

Typical Pedon

Butts County, Georgia; 1.0 mile south of Newton County line on Georgia Highway 36 to Barnett Bridge Road, 3.6 miles west to Fincherville Road, 1.9 miles north to curve, 3,200 feet northeast; 7.5-minute USGS topographic quadrangle, Worthville, GA (1964); lat. 33 degrees 26 minutes 00 seconds N. and long. 83 degrees 55 minutes 22 seconds W.

A—0 to 6 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; slightly sticky; many very fine and fine roots; common fine prominent strong brown (7.5YR 4/6) oxidized rhizospheres; strongly acid; clear smooth boundary.
Bg—6 to 27 inches; grayish brown (10YR 5/2) clay loam; weak medium subangular blocky structure; slightly sticky, nonplastic; few fine roots; common medium prominent strong brown (7.5YR 5/6) masses of oxidized iron; strongly acid; clear wavy boundary.
Cg1—27 to 45 inches; grayish brown (10YR 5/2) loamy sand; massive; moderately acid; clear wavy boundary.
Cg2—45 to 55 inches; dark grayish brown (10YR 4/2) sandy clay loam; massive; slightly sticky, nonplastic; moderately acid; clear wavy boundary.
Cg3—55 or 60 inches; dark grayish brown (10YR 4/2) loamy sand; massive; moderately acid.

Range in Characteristics

Thickness of the solum: 20 to more than 45 inches
Reaction: Very strongly acid to neutral; some part of 10- to 40-inch control section is moderately acid to neutral

A horizon:
Thickness—6 to 10 inches
Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 4
Texture—sandy loam, loam, silty clay loam, or clay loam
Redoximorphic features—oxidized rhizospheres in shades of red and brown in some pedons

Bg horizon:
Color—neutral in hue or hue of 10YR or 2.5Y; value of 4 to 6 and chroma of 1 or 2
Texture—loam, silt loam, sandy clay loam, silty clay loam, or clay loam; pockets of finer or coarser materials in some pedons
Redoximorphic features—masses of oxidized iron in shades of red, brown, and yellow in some pedons

Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2
Texture—loamy sand, sandy loam, loam, or sandy clay loam; stratified layers of sand, sandy loam, sandy clay loam, or clay loam in some pedons
Redoximorphic features—masses of oxidized iron in shades of red, brown, and yellow

Whistlestop Series

Depth class: Very deep
Agricultural drainage class: Moderately well drained
Permeability: Slow
Parent material: Old alluvium
Seasonal high water table: 2.5 to 3.5 feet; apparent
Landform: Stream terraces
Slope range: 0 to 4 percent
Taxonomic class: Fine, mixed, thermic Oxyaquic Hapludults

Geographically Associated Soils

- Hiwassee soils in the higher terrace positions

Typical Pedon

Monroe County, Georgia; 3,400 feet south and 1,500 feet east of bridge at Georgia Highway 83 and Ocmulgee River; 7.5-minute USGS topographic quadrangle, Berner, GA (1973); lat. 33 degrees 08 minutes 59 seconds N. and long. 83 degrees 49 minutes 13 seconds W.

A—0 to 7 inches; dark yellowish brown (10YR 3/4) loam; moderate fine granular structure; friable; slightly acid; clear smooth boundary.
Bt1—7 to 26 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; many prominent clay films on faces of peds; few medium iron concretions; strongly acid; clear smooth boundary.
Bt2—26 to 37 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; many distinct clay films on faces of peds; common medium prominent light yellowish brown (2.5Y 6/4) iron depletions; few fine distinct red (2.5YR 4/6) masses of oxidized iron; strongly acid; clear smooth boundary.
Bt3—37 to 55 inches; red (2.5YR 4/6) clay loam; strong medium platy structure; firm; many prominent clay films on faces of peds; 30 percent light brownish gray (2.5Y 6/2) iron depletions; 35 percent yellowish red (5YR 4/6) masses of oxidized iron; strongly acid; gradual wavy boundary.
C—55 or 60 inches; strong brown (7.5YR 4/6) sandy clay loam; massive; firm; common coarse prominent light gray (10YR 7/1) iron depletions; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Reaction: Very strongly acid or strongly acid

A horizon:
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 6
Texture (fine-earth fraction)—sandy loam or loam

E horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam

BA or BE horizon (where present):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 or 6
Texture (fine-earth fraction)—sandy loam or loam

Bt horizon (upper part):
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8
Texture (fine-earth fraction)—sandy clay, clay loam, or clay

Bt horizon (lower part):
Color—hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 or 8
Texture (fine-earth fraction)—sandy clay, clay loam, or clay
Redoximorphic features—iron depletions in shades of gray and brown and masses of oxidized iron in shades of red and brown

C horizon (where present):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8; or is multicolored in shades of red, brown, yellow, and gray
Texture (fine-earth fraction)—sandy loam, sandy clay loam, or clay loam
Redoximorphic features—iron depletions in shades of gray and brown and masses of oxidized iron in shades of red and brown

Wilkes Series

Depth class: Shallow
Agricultural drainage class: Well drained
Permeability: Moderately slow
Parent material: Residuum from mafic crystalline rock
Landform: Hills
Slope range: 6 to 30 percent
Taxonomic class: Loamy, mixed, active, thermic, shallow Typic Hapludalfs

Geographically Associated Soils

- Madison soils, which are very deep and have a fine particle-size control section
- Winnsboro soils, which are deep and have a fine particle-size control section
- Wynott soils, which are moderately deep and have a fine particle-size control section

Typical Pedon

Jasper County, Georgia; 10.5 miles southwest of Monticello, Georgia, on Georgia Highway 83, about 1.0 mile west on United States Forest Service road, 20 feet southwest of road; 7.5-minute USGS topographic quadrangle, Berner, GA (1973); lat. 33 degrees 10 minutes 50 seconds N. and long. 83 degrees 48 minutes 22 seconds W.

A—0 to 3 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine and few medium roots; few fine flakes of mica; strongly acid; abrupt smooth boundary.

E—3 to 6 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; common fine and few medium roots; few fine flakes of mica; strongly acid; abrupt smooth boundary.
Bt—6 to 10 inches; dark yellowish brown (10YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; common very fine and fine and few medium roots; few distinct clay films on faces of peds; many fine and medium flakes of mica; moderately acid; clear wavy boundary.
BC—10 to 18 inches; dark yellowish brown (10YR 4/6) sandy clay loam; few fine distinct yellow (10YR 7/6) and prominent yellowish red (5YR 5/8) mottles; few seams of clay material; weak medium subangular blocky structure; firm; few medium roots; few distinct clay films on faces of peds; many fine and medium flakes of mica; slightly acid; clear wavy boundary.
Cr—18 to 45 inches; weathered intermediate or mafic crystalline bedrock
R—45 inches; unweathered intermediate or mafic crystalline bedrock

Range in Characteristics

Thickness of the solum: 10 to 18 inches
Depth to soft bedrock: 10 to 20 inches
Depth to hard bedrock: 40 to 60 inches
Content and size of coarse fragments: 0 to 15 percent gravel and cobbles throughout
Reaction: Strongly acid to slightly acid in the upper horizons; slightly acid to slightly alkaline in the lower horizons

A horizon:
Thickness—2 to 5 inches
Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3
Texture—sandy loam

E horizon:
Color—hue of 10YR, value of 5, and chroma of 3 or 4
Texture—sandy loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6
Texture—sandy clay loam, clay loam, or clay; 18 to 35 percent weighted average content of clay in control section

BC horizon:
Color—hue of 10YR, value of 4, and chroma of 6; or multicolored in shades of brown and red
Texture—sandy clay loam
Mottles—shades of red and yellow

C horizon (where present):
Color—multicolored in shades of brown and olive
Texture—sandy loam or sandy clay loam saprolite

Cr horizon:
Type of bedrock—weathered intermediate or mafic crystalline rock

R layer:
Type of bedrock—unweathered intermediate or mafic crystalline rock

Winnsboro Series

Depth class: Deep
Agricultural drainage class: Well drained

Permeability: Slow
Parent material: Residuum from mafic crystalline rock
Landform: Hills
Slope range: 2 to 30 percent
Taxonomic class: Fine, mixed, active, thermic Typic Hapludalfs

Geographically Associated Soils

- Madison soils, which are very deep
- Wilkes soils, which are shallow
- Wynott soils, which are moderately deep

Typical Pedon

Butts County, Georgia; 0.85 mile north of Monroe county line on U.S Highway 23/ Georgia Highway 87, about 150 feet northeast of road; 7.5-minute USGS topographic quadrangle, Berner, GA (1973); lat. 33 degrees 12 minutes 24 seconds N. and long. 83 degrees 51 minutes 26 seconds W.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; friable; many fine and very fine roots; 5 percent angular quartz pebbles; strongly acid; abrupt smooth boundary.

A2—2 to 5 inches; dark brown (10YR 3/3) sandy loam; weak fine granular structure; friable; common fine and very fine roots; 5 percent angular quartz pebbles; strongly acid; clear smooth boundary.

EB—5 to 9 inches; dark yellowish brown (10YR 4/6) sandy loam; many medium faint (10YR 4/3) brown mottles; weak fine granular structure; friable; common very fine and few medium roots; moderately acid; clear smooth boundary.

Bt1—9 to 19 inches; strong brown (7.5YR 4/6) clay; moderate medium angular and weak medium subangular blocky structure; firm; moderately sticky, moderately plastic; common very fine and few medium roots; many prominent clay films on faces of peds; common very fine flakes of mica; moderately acid; gradual wavy boundary.

Bt2—19 to 23 inches; dark yellowish brown (10YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; moderately sticky, moderately plastic; few very fine roots; common distinct clay films on faces of peds; common very fine flakes of mica; common medium prominent masses of manganese; moderately acid; gradual wavy boundary.

BC—23 to 42 inches; dark yellowish brown (10YR 4/6) sandy clay loam; common medium faint brownish yellow (10YR 6/6), common medium faint dark grayish brown (10YR 4/2), and common medium distinct very pale brown (10YR 8/3) mottles; weak medium subangular blocky structure; friable; few very fine roots; many very fine flakes of mica; slightly acid; gradual wavy boundary.

C1—42 to 50 inches; dark yellowish brown (10YR 4/6), very pale brown (10YR 8/3), brownish yellow (10YR 6/6), and dark grayish brown (10YR 4/2) sandy clay loam saprolite; massive; friable; many very fine flakes of mica; slightly acid; gradual wavy boundary.

C2—50 to 56 inches; dark yellowish brown (10YR 4/6), pale brown (10YR 6/3), and black (10YR 2/1) sandy clay loam saprolite; massive; very friable; many very fine flakes of mica; slightly acid; clear wavy boundary.

Cr—56 to 60 inches; weathered mafic crystalline bedrock

Range in Characteristics

Thickness of the solum: 23 to 50 inches
Depth to soft bedrock: 42 to 60 inches
Content and size of coarse fragments: 0 to 10 percent gravel and cobbles throughout

Reaction: Strongly acid to slightly acid in the upper horizons; slightly acid to slightly alkaline in the lower horizons

A horizon:
Thickness—4 to 8 inches
Color—hue of 10YR, value of 3, and chroma of 2 or 3
Texture—sandy loam

E or EB horizon (where present):
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 8
Texture—sandy loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture—sandy clay or clay

Bt horizon (lower part):
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture—sandy clay

BC horizon (where present):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8
Texture—sandy clay loam
Mottles—shades of yellow and brown

C horizon:
Color—multicolored in shades of brown, yellow, and black
Texture—sandy loam or sandy clay loam saprolite

Cr horizon:
Type of bedrock—weathered mafic crystalline rock

Wynott Series

Depth class: Moderately deep
Agricultural drainage class: Well drained
Permeability: Slow
Parent material: Residuum from mafic crystalline rock
Landform: Hills
Slope range: 2 to 30 percent
Taxonomic class: Fine, mixed, active, thermic Typic Hapludalfs

Geographically Associated Soils

- Madison soils, which are very deep and have a fine particle-size control section
- Wilkes soils, which are shallow
- Winnsboro soils, which are deep

Typical Pedon

Jasper County, Georgia; 9.5 miles south of Monticello, Georgia, on Georgia Highway 83, about 3.7 miles south on Juliette Road, 1,300 feet northeast on U.S. Government road, 50 feet south of road; 7.5-minute USGS topographic quadrangle, Berner, GA (1973); lat. 33 degrees 09 minutes 13 seconds N. and long. 83 degrees 47 minutes 52 seconds W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; friable; many fine and few medium roots; strongly acid; clear smooth boundary.

E—5 to 9 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; friable; common fine and few medium roots; moderately acid; gradual wavy boundary.

Bt—9 to 17 inches; dark yellowish brown (10YR 4/6) clay; moderate medium subangular blocky structure; very firm; moderately sticky, moderately plastic; few fine roots; common prominent clay films on faces of peds; common fine flakes of mica; moderately acid; gradual wavy boundary.

BC—17 to 23 inches; dark yellowish brown (10YR 4/6) sandy clay; common medium distinct brown (10YR 5/3) mottles; moderate medium subangular blocky structure; very firm; moderately sticky, moderately plastic; few distinct clay films on faces of peds; common fine flakes of mica; slightly acid; gradual wavy boundary.

C—23 to 37; dark yellowish brown (10YR 4/6), pale brown (10YR 6/3), and black (10YR 2/1) sandy loam saprolite; massive; very friable; many fine flakes of mica; slightly acid; clear wavy boundary.

Cr—37 to 60 inches; weathered mafic crystalline bedrock

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to soft bedrock: 22 to 40 inches
Depth to hard bedrock: 55 to more than 60 inches
Content and size of coarse fragments: 0 to 15 percent gravel and cobbles throughout
Reaction: Strongly acid to slightly acid in the upper horizons; moderately acid or slightly acid in the lower horizons

A horizon:
Thickness—3 to 5 inches
Color—hue of 10YR, value of 3, and chroma of 2 or 3
Texture—sandy loam

E horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—sandy loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture—clay

BC horizon:
Color—hue of 10YR, value of 4, and chroma of 6
Texture—sandy clay
Mottles—shades of brown

C horizon:
Color—multicolored in shades of brown, yellow, and black
Texture—sandy loam or sandy clay loam saprolite

Cr horizon:
Type of bedrock—weathered mafic crystalline rock

Formation of the Soils

This section describes the factors of soil formation and relates them to the soils in the survey area.

Factors of Soil Formation

Soil characteristics are determined by the physical and mineralogical composition of the parent material; the plants and animals living on and in the soil; the climate under which the parent material accumulated and has existed since accumulation; the relief, or lay of the land; and the length of time that forces of soil formation have acted on the soil material (Byers and others, 1938; Jenny, 1941). All of these factors influence every soil, but the significance of each factor varies from place to place. In one area, one factor may dominate soil formation; in another area, a different factor may dominate.

The interrelationships among the soil-forming factors are complex, and the effects of any one factor cannot be isolated and completely evaluated. It is convenient, however, to describe each factor separately and to indicate the probable effects of each.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. The chemical and mineralogical composition of the soil is derived largely from the parent material. The soils in Monroe County formed mainly from materials weathered from crystalline rock, such as granite gneiss, biotite gneiss, amphibolites, and mica schist (GADNR, 1976).

Hard Labor soils are examples of soils that have a yellowish brown subsoil and formed in parent material weathered mainly from granite gneiss. Cecil and Pacolet soils are examples of soils that have a reddish subsoil and formed in parent material weathered mainly from granite gneiss or biotite gneiss. Madison soils have a high content of mica and weathered mainly from mica schist. Lloyd soils are examples of soils that have a dark surface layer and a subsoil that formed in parent material weathered mainly from amphibolites.

Stream alluvium is adjacent to all the streams in Monroe County. It includes sandy, loamy, and clayey sediment transported from the uplands. Buncombe, Chewacla, Toccoa, and Wehadkee soils formed in stream alluvium.

Stream terraces are near some of the larger streams and rivers. The soils on the terraces formed in alluvium that is younger than the parent material of upland soils but older than the alluvium on adjacent flood plains. Hiwassee and Whistlestop soils formed in alluvium on stream terraces.

Plants and Animals

The effects of plants, animals, and other organisms on soil formation are significant. Plants and animals increase the content of organic matter and nitrogen in

the soil, increase or decrease the content of plant nutrients, and change soil structure and porosity.

Plants recycle nutrients, add organic matter, and provide food and cover for animals. They stabilize the surface layer so that the soil-forming processes can continue. They also provide a more stable environment for the soil-forming processes by protecting the soils from extremes in temperature.

The soils in the survey area formed under a succession of briers, brambles, and woody plants that were dominated by pines and hardwoods. Hardwoods eventually suppressed most other plants and became the climax vegetation.

Animals rearrange the soil material by roughening the surface, forming and filling channels, and shaping the peds and voids. The soil is mixed by ants, wasps, worms, and spiders, which make channels; by crustaceans, such as crayfish; and by turtles and foxes, which dig burrows. Humans affect the soil-forming processes by tilling crops, removing natural vegetation and establishing different plants, and reducing or increasing the level of fertility.

Bacteria, fungi, and other micro-organisms hasten the decomposition of organic matter and increase the rate at which nutrients are released for plant growth. The net gains and losses caused by plants and animals are important in Monroe County. Within the relatively small confines of the survey area, however, one soil is not significantly different from another because of the effects of plants and animals.

Climate

The present climate of Monroe County is thought to be similar to the climate that existed when the soils formed. The relatively high amount of rainfall and warm temperatures contribute to rapid soil formation. They are the two most important climatic features that relate to soil properties.

Water from precipitation is essential in soil formation. Water dissolves soluble materials and is used by plants and animals. It transports material from one part of the soil to another part and from one area of the landscape to another.

The soils in Monroe County formed under a thermic temperature regime; that is, the mean soil temperature at a depth of 20 inches is 59 to 72 degrees F. Based on the mean annual air temperature, the estimated soil temperature in this county is 64 degrees F. The rate of chemical reactions and other processes in the soil depends to some extent on temperature. In addition, temperature affects the type and quality of vegetation, the amount and kind of organic matter, and the rate at which the organic matter decomposes.

Relief

Relief is the elevations, or inequalities, of the land surface considered collectively. The color of the soil, the degree of soil wetness, the thickness of the A horizon, the content of organic matter, and the plant cover are commonly related to relief. In Monroe County, the most obvious effects of relief are those that relate to soil color and the degree of soil wetness.

Lloyd soils have a dark red subsoil, whereas Wehadkee soils have a grayish brown and gray subsoil. The difference in color results from a difference in relief and a corresponding difference in internal drainage. Because Lloyd soils are in the higher landscape positions and are better drained than Wehadkee soils, Lloyd soils are better oxidized and have a reddish subsoil.

The movement of water across the surface and through the soil is controlled mostly by relief. Water flowing across the surface commonly carries solid particles and causes erosion or deposition, depending on the kind of relief. In the sloping area, the soils are drier because more water runs off and less water penetrates the surface.

The soils in low-lying areas are commonly wetter because they receive the water that flows off and through the soils in the higher landscape positions.

Time

The length of time that the soil-forming processes have acted on the parent material helps to determine the characteristics of the soil. Determinations of when soil formation began in the survey area are not exact. Most of the soils are considered mature. Mature soils are in equilibrium with the environment. They are characterized by readily recognizable pedogenic horizons and a regular decrease in carbon content as depth increases. Some areas of Lloyd soils are on stable landscapes where the soil-forming processes have been active for thousands of years. These mature soils have a highly weathered solum and a well expressed zone of illuviation. In places, erosion has removed most of the zone of eluviation.

Toccoa soils are young soils. They receive sediment annually from floodwater. They are stratified and are not old enough to have a zone of illuviation. They do not have pedogenic horizons. They are characterized by an irregular decrease in carbon content as depth increases.

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook" (available in local offices of the Natural Resources Conservation Service or on the Internet).

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. An informal term loosely applied to various portions of a flood plain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. See Redoximorphic features.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Foothills. A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

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.

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

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

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hill. A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

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 overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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

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

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

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

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.
Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.
Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.
Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

K_{sat}. Saturated hydraulic conductivity. (See Saturated hydraulic conductivity.)

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties

of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches

Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:

   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*

B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*

C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:

A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*

B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).

3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

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

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.

Saturated hydraulic conductivity (Ksat). The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy?s Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as ?Ksat.? Terms describing saturated hydraulic conductivity are *very high*, 100 or more micrometers per second (14.17 or more inches per hour); *high*, 10 to 100 micrometers per second (1.417 to 14.17 inches per hour); *moderately high*, 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour); *moderately low*, 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour); *low*, 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour); and *very low*, less than 0.01 micrometer per second (less than 0.001417 inch per hour). To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Series, soil. A group of soils that have profiles that are almost alike. All the soils of a given series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

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

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). 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.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

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.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 6 percent
Moderately sloping	6 to 10 percent
Strongly sloping	10 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 35 percent

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines.

Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

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 and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

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

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

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

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

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Suitability ratings. Ratings for the degree of suitability of soils for pasture, crops, woodland, and engineering uses. The ratings and the general criteria used for their selection are as follows:

Well suited.—The intended use may be initiated and maintained by using only the standard materials and methods typically required for that use. Good results can be expected.

Suited or moderately suited.—The limitations affecting the intended use make special planning, design, or maintenance necessary.

Poorly suited.—The intended use is difficult or costly to initiate and maintain because of certain soil properties, such as steep slopes, a severe hazard of erosion, a high water table, low fertility, and a hazard of flooding. Major soil reclamation, special design, or intensive management practices are needed.
Very poorly suited, not suited, or unsuited.—The intended use is very difficult or costly to initiate and maintain, and thus it generally should not be undertaken.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Terrace (conservation). 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 generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thermic soil temperature regime. The mean annual soil temperature is 15 degrees C or higher but lower than 22 degrees C, and the difference between mean summer and mean winter soil temperatures is more than 6 degrees C either at a depth of 50 cm from the soil surface or at a densic, lithic, or paralithic contact, whichever is shallower.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by

atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1971-2000 at Forsyth, Georgia)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	56.7	32.4	44.6	75	8	52	4.43	2.31	6.62	7	0.4
February----	61.4	33.4	47.4	79	12	71	4.59	2.37	6.65	6	0.5
March-------	69.3	40.4	54.9	86	19	195	5.51	2.73	8.05	8	0.1
April-------	76.7	46.2	61.5	90	27	348	3.89	1.66	6.00	5	0.0
May---------	83.3	54.6	69.0	94	37	573	3.09	1.13	4.98	5	0.0
June--------	89.0	63.4	76.2	99	47	778	3.16	1.35	4.85	6	0.0
July--------	91.4	67.8	79.6	101	57	910	4.64	2.10	6.93	7	0.0
August------	90.1	66.7	78.4	100	56	851	3.69	1.86	5.42	5	0.0
September---	85.1	61.2	73.2	96	43	692	3.39	1.64	5.18	5	0.0
October-----	76.3	48.3	62.3	89	28	378	2.67	0.91	4.23	3	0.0
November----	67.3	40.6	53.9	83	21	171	3.70	2.07	5.01	6	0.0
December----	59.7	34.5	47.1	79	11	78	3.81	2.19	5.29	5	0.0
Yearly:											
Average---	75.5	49.1	62.3	---	---	---	---	---	---	---	---
Extreme---	104	-5	---	102	6	---	---	---	---	---	---
Total-----	---	---	---	---	---	5098	46.56	28.51	53.32	68	0.9

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Forsyth, Georgia)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 30	Apr. 10	Apr. 23
2 year in 10 later than--	Mar. 23	Apr. 4	Apr. 19
5 year in 10 later than--	Mar. 11	Mar. 24	Apr. 10
First freezing temperature in fall:			
1 yr in 10 earlier than--	Nov. 10	Oct. 22	Oct. 11
2 yr in 10 earlier than--	Nov. 17	Oct. 29	Oct. 16
5 yr in 10 earlier than--	Nov. 29	Nov. 10	Oct. 27

Table 3.—Growing Season

(Recorded for the period 1971-2000 at Forsyth, Georgia)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	235	203	179
8 years in 10	244	212	187
5 years in 10	260	230	202
2 years in 10	276	248	218
1 year in 10	285	258	226

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AwE	Ashlar-Wake complex, 15 to 25 percent slopes	365	0.1
BcB	Buncombe loamy sand, 0 to 6 percent slopes, occasionally flooded	850	0.3
BpD	Bush River-Prosperity complex, 6 to 15 percent slopes	6,055	2.4
CaB	Cataula sandy loam, 2 to 6 percent slopes	3,075	1.2
CdB	Cecil sandy loam, 2 to 6 percent slopes	5,600	2.2
CeC2	Cecil sandy loam, 6 to 10 percent slopes, moderately eroded	3,975	1.6
CfB2	Cecil sandy clay loam, 2 to 6 percent slopes, moderately eroded	16,190	6.4
CgC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded	27,020	10.6
CuC	Cecil-Urban land complex, 2 to 10 percent slopes	2,540	1.0
CwA	Chewacla loam, 0 to 2 percent slopes, frequently flooded	14,765	5.8
DAM	Dam	70	*
HaB	Hard Labor sandy loam, 2 to 6 percent slopes	1,130	0.4
HwB	Hiwassee sandy loam, 0 to 4 percent slopes	200	*
LcB	Lloyd sandy loam, 2 to 6 percent slopes	3,495	1.4
LdD2	Lloyd sandy loam, 6 to 15 percent slopes, moderately eroded	3,040	1.2
LfB3	Lloyd sandy clay loam, 2 to 6 percent slopes, severely eroded	11,085	4.4
LfD3	Lloyd sandy clay loam, 6 to 15 percent slopes, severely eroded	18,570	7.3
LfE3	Lloyd sandy clay loam, 15 to 30 percent slopes, severely eroded	2,980	1.2
M-W	Miscellaneous water	30	*
MaB2	Madison sandy loam, 2 to 6 percent slopes, moderately eroded	1,705	0.7
MaD2	Madison sandy loam, 6 to 15 percent slopes, moderately eroded	2,990	1.2
MaE2	Madison sandy loam, 15 to 30 percent slopes, moderately eroded	1,505	0.6
MdB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	9,040	3.6
MdD3	Madison sandy clay loam, 6 to 15 percent slopes, severely eroded	40,995	16.1
MdE3	Madison sandy clay loam, 15 to 30 percent slopes, severely eroded	7,625	3.0
MsD	Madison-Bethlehem complex, 6 to 15 percent slopes, stony	9,375	3.7
MsE	Madison-Bethlehem complex, 15 to 30 percent slopes, stony	4,085	1.6
PaB	Pacolet sandy loam, 2 to 6 percent slopes	245	*
PaD2	Pacolet sandy loam, 6 to 15 percent slopes, moderately eroded	2,510	1.0
PaE2	Pacolet sandy loam, 15 to 25 percent slopes, moderately eroded	1,185	0.5
PcB3	Pacolet sandy clay loam, 2 to 6 percent slopes, severely eroded	215	*
PcD3	Pacolet sandy clay loam, 6 to 15 percent slopes, severely eroded	6,570	2.6
PcE3	Pacolet sandy clay loam, 15 to 25 percent slopes, severely eroded	1,040	0.4
PdD	Pacolet-Saw complex, 6 to 15 percent slopes, stony	9,425	3.7
PdE	Pacolet-Saw complex, 15 to 25 percent slopes, stony	4,815	1.9
PfE	Pacolet-Towaliga complex, 10 to 35 percent slopes, cobbly	25	*
PnE	Pacolet-Urban land complex, 10 to 25 percent slopes	85	*
Pq	Pits, quarry	455	0.2
PrE	Prosperity-Bush River complex, 15 to 25 percent slopes	1,695	0.7
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded	315	0.1
SeB	Sedgefield sandy loam, 0 to 4 percent slopes	715	0.3
ToA	Toccoa sandy loam, 0 to 2 percent slopes, frequently flooded	5,160	2.0
Ud	Udorthents, loamy	1,470	0.6
Ur	Urban land	335	0.1
W	Water	6,550	2.6
WaD	Wake-Ashlar-Rock outcrop complex, 2 to 15 percent slopes	90	*
WeA	Wehadkee loam, 0 to 1 percent slopes, frequently flooded	875	0.3
WfA	Wehadkee loam, 0 to 1 percent slopes, frequently flooded, ponded	180	*
WhB	Whistlestop sandy loam, 0 to 4 percent slopes, rarely flooded	625	0.2
WmE	Winnsboro-Wynott complex, 15 to 30 percent slopes, very stony	15	*
WnD	Wynott-Wilkes-Winnsboro complex, 6 to 15 percent slopes	7,110	2.8
WnE	Wynott-Wilkes-Winnsboro complex, 15 to 30 percent slopes	3,780	1.5
WoD	Wynott-Winnsboro-Mecklenburg complex, 6 to 15 percent slopes, very stony	375	0.1
WsB	Wynott-Winnsboro-Sedgefield complex, 2 to 6 percent slopes, very stony	85	*
	Total	254,300	100.0

* Less than 0.1 percent.

Table 5.—Nonirrigated Yields by Map Unit Component

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. 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	Land capability	Corn	Grass hay	Pasture	Soybeans	Wheat
		Bu	Tons	AUM	Bu	Bu
AwE:						
Ashlar	6e	---	2.50	4.00	---	---
Wake	6s	---	1.00	2.50	---	---
BcB:						
Buncombe	4w	---	3.50	4.00	---	---
BpD:						
Bush River	4e	80.00	3.50	5.80	20.00	30.00
Prosperity	4e	80.00	3.50	5.80	20.00	30.00
CaB:						
Cataula	2e	65.00	3.50	6.50	35.00	45.00
CdB:						
Cecil	2e	80.00	4.80	8.00	35.00	45.00
CeC2:						
Cecil	3e	75.00	4.50	7.50	30.00	40.00
CfB2:						
Cecil	3e	70.00	3.90	6.50	25.00	35.00
CgC3:						
Cecil	4e	60.00	3.50	6.00	20.00	30.00
CwA:						
Chewacla	4w	95.00	5.00	9.00	40.00	50.00
HaB:						
Hard Labor	2e	80.00	4.50	8.00	30.00	40.00
HwB:						
Hiwassee	2e	110.00	3.30	8.50	44.00	55.00
LcB:						
Lloyd	2e	90.00	5.00	8.50	35.00	50.00
LdD2:						
Lloyd	4e	90.00	5.00	8.50	35.00	50.00
LfB3:						
Lloyd	3e	80.00	4.50	8.00	25.00	45.00
LfD3:						
Lloyd	4e	70.00	3.50	7.00	20.00	40.00
LfE3:						
Lloyd	7e	70.00	3.50	7.00	20.00	40.00
MaB2:						
Madison	2e	80.00	4.80	8.00	35.00	45.00
MaD2:						
Madison	4e	70.00	4.00	7.00	25.00	35.00

Table 5.—Nonirrigated Yields by Map Unit Component—Continued

Map symbol and soil name	Land capability	Corn	Grass hay	Pasture	Soybeans	Wheat
		Bu	Tons	AUM	Bu	Bu
MaE2:						
Madison	7e	---	3.50	6.50	---	---
MdB3:						
Madison	3e	70.00	3.50	6.50	25.00	35.00
MdD3:						
Madison	6e	60.00	2.90	5.50	20.00	25.00
MdE3:						
Madison	7e	---	2.50	5.00	---	---
MsD:						
Madison	4e	65.00	4.00	6.00	25.00	35.00
Bethlehem	4e	60.00	3.50	5.50	20.00	25.00
MsE:						
Madison	7e	---	3.50	5.50	---	---
Bethlehem	7e	---	3.00	5.00	---	---
PaB:						
Pacolet	2e	70.00	4.00	8.00	30.00	40.00
PaD2:						
Pacolet	4e	65.00	3.50	7.50	20.00	25.00
PaE2:						
Pacolet	6e	---	3.00	6.00	---	---
PcB3:						
Pacolet	3e	65.00	3.50	6.50	20.00	30.00
PcD3:						
Pacolet	6e	---	2.90	5.50	---	---
PcE3:						
Pacolet	7e	---	2.50	5.00	---	---
PdD:						
Pacolet	4e	65.00	3.50	6.50	20.00	25.00
Saw	4e	55.00	3.00	4.50	15.00	20.00
PdE:						
Pacolet	6e	---	3.00	6.00	---	---
Saw	6e	---	2.50	4.00	---	---
PfE:						
Pacolet	7e	---	3.00	6.00	---	---
Towaliga	7e	---	2.50	4.00	---	---
PrE:						
Prosperity	7e	---	3.50	5.80	---	---
Bush River	7e	---	3.50	5.80	---	---
RvA:						
Riverview	2w	120.00	4.50	8.00	45.00	50.00

Table 5.—Nonirrigated Yields by Map Unit Component—Continued

Map symbol and soil name	Land capability	Corn	Grass hay	Pasture	Soybeans	Wheat
		Bu	Tons	AUM	Bu	Bu
SeB:						
Sedgefield	2w	70.00	3.30	5.50	35.00	30.00
ToA:						
Toccoa	3w	90.00	4.50	8.00	25.00	35.00
WaD:						
Wake	4s	---	1.00	2.50	---	---
Ashlar	4e	---	2.50	4.00	---	---
Rock outcrop	8s	---	---	---	---	---
WeA:						
Wehadkee	6w	---	---	8.50	---	---
WfA:						
Wehadkee	6w	---	---	8.50	---	---
WhB:						
Whistlestop	2e	120.00	4.50	8.00	45.00	50.00
WmE:						
Winnsboro	6e	---	2.50	5.50	---	---
Wynott	7e	---	2.50	5.00	---	---
WnD:						
Wynott	4e	60.00	3.00	5.50	30.00	40.00
Wilkes	6s	---	2.00	4.50	---	---
Winnsboro	4e	60.00	3.00	6.00	30.00	40.00
WnE:						
Wynott	7e	---	2.50	5.00	---	---
Wilkes	7s	---	1.50	4.00	---	---
Winnsboro	6e	---	2.50	5.50	---	---
WoD:						
Wynott	4e	60.00	3.00	5.50	30.00	40.00
Mecklenburg	3e	80.00	3.30	7.00	35.00	35.00
Winnsboro	4e	60.00	3.00	6.00	30.00	40.00
WsB:						
Wynott	4e	60.00	3.00	5.50	30.00	40.00
Winnsboro	4e	60.00	3.00	6.00	30.00	40.00
Sedgefield	2w	70.00	3.30	5.50	35.00	30.00

Table 6.—Prime Farmland and Other Important Farmlands

(Only the soils considered prime or important farmland are listed. Urban or built-up areas of the soils listed are not considered prime or important farmland. If a soil is prime or important farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map symbol	Map unit name	Farmland Classification
CaB	Cataula sandy loam, 2 to 6 percent slopes	Prime farmland in all areas
CdB	Cecil sandy loam, 2 to 6 percent slopes	Prime farmland in all areas
HaB	Hard Labor sandy loam, 2 to 6 percent slopes	Prime farmland in all areas
HwB	Hiwassee sandy loam, 0 to 4 percent slopes	Prime farmland in all areas
LcB	Lloyd sandy loam, 2 to 6 percent slopes	Prime farmland in all areas
MaB2	Madison sandy loam, 2 to 6 percent slopes, moderately eroded	Prime farmland in all areas
PaB	Pacolet sandy loam, 2 to 6 percent slopes	Prime farmland in all areas
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland in all areas
WhB	Whistlestop sandy loam, 0 to 4 percent slopes, rarely flooded	Prime farmland in all areas
CeC2	Cecil sandy loam, 6 to 10 percent slopes, moderately eroded	Farmland of statewide importance
CfB2	Cecil sandy clay loam, 2 to 6 percent slopes, moderately eroded	Farmland of statewide importance
CwA	Chewacla loam, 0 to 2 percent slopes, frequently flooded	Farmland of statewide importance
SeB	Sedgefield sandy loam, 0 to 4 percent slopes	Farmland of statewide importance
ToA	Toccoa sandy loam, 0 to 2 percent slopes, frequently flooded	Farmland of statewide importance

Table 7.—Forestland Productivity

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Potential for seedling mortality: Value	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Trees to manage
					cu ft/ac	
AwE:						
Ashlar	Moderate Available water	0.50	loblolly pine	75	---	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	65	---	
Wake	High Available water	1.00	hickory	---	---	loblolly pine, shortleaf pine
			loblolly pine	60	72	
			northern red oak	---	---	
			post oak	---	---	
			shortleaf pine	50	72	
BcB:						
Buncombe	Low		American sycamore	---	---	loblolly pine, yellow-poplar
			elm	---	---	
			hickory	---	---	
			loblolly pine	90	129	
			northern red oak	---	---	
			river birch	---	---	
			southern red oak	---	---	
			sweetgum	---	---	
			yellow-poplar	100	114	
BpD:						
Bush River	Low		loblolly pine	84	118	loblolly pine, yellow-poplar, shortleaf pine
			shortleaf pine	66	101	
			white oak	72	54	
			southern red oak	72	54	
			yellow-poplar	---	---	
			sweetgum	---	---	
			hickory	---	---	
			Virginia pine	---	---	
			black oak	---	---	
Prosperity	Low		loblolly pine	84	118	loblolly pine, yellow-poplar, shortleaf pine
			shortleaf pine	66	101	
			white oak	72	54	
			southern red oak	72	54	
			yellow-poplar	---	---	
			sweetgum	---	---	
			hickory	---	---	
			Virginia pine	---	---	
			black oak	---	---	
CaB:						
Cataula	Low		loblolly pine	80	114	loblolly pine
			shortleaf pine	66	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
CdB:						
Cecil	Low		loblolly pine	83	114	loblolly pine, shortleaf pine
			northern red oak	---	---	
			post oak	---	---	
			scarlet oak	---	---	
			shortleaf pine	69	114	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
CeC2:						
Cecil	Low		loblolly pine	83	114	loblolly pine, shortleaf pine
			northern red oak	---	---	
			post oak	---	---	
			scarlet oak	---	---	
			shortleaf pine	69	114	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
CfB2:						
Cecil	Low		loblolly pine	72	100	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	63	100	
			white oak	64	56	
CgC3:						
Cecil	Low		loblolly pine	72	100	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	63	100	
			white oak	64	56	
CwA:						
Chewacla	High Wetness	1.00	blackgum	---	---	loblolly pine, sweetgum, yellow-poplar
			eastern cottonwood	---	---	
			green ash	---	---	
			loblolly pine	95	143	
			red maple	---	---	
			southern red oak	---	---	
			sweetgum	---	---	
			water oak	---	---	
			willow oak	---	---	
			yellow-poplar	95	100	
HaB:						
Hard Labor	Low		loblolly pine	88	129	loblolly pine
			yellow-poplar	---	---	
			white oak	---	---	
			southern red oak	---	---	
			sweetgum	---	---	
			hickory	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
HwB:						
Hiwassee	Low		loblolly pine	94	140	loblolly pine, shortleaf pine
			shortleaf pine	---	---	
			northern red oak	---	---	
			white oak	---	---	
			southern red oak	---	---	
LcB:						
Lloyd	Low		loblolly pine	85	114	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	75	114	
			southern red oak	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
LdD2:						
Lloyd	Low		loblolly pine	85	114	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	75	114	
			southern red oak	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
LfB3:						
Lloyd	Low		loblolly pine	71	100	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	68	100	
			southern red oak	---	---	
			white oak	---	---	
LfD3:						
Lloyd	Low		loblolly pine	71	100	loblolly pine, shortleaf pine
			northern red oak	75	56	
			shortleaf pine	68	100	
			southern red oak	75	56	
			white oak	70	56	
LfE3:						
Lloyd	Moderate		loblolly pine	71	100	loblolly pine, shortleaf pine
	Available water	0.50	northern red oak	75	56	
			shortleaf pine	68	100	
			southern red oak	75	56	
			white oak	70	56	
MaB2:						
Madison	Low		loblolly pine	80	114	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	64	100	
			southern red oak	---	---	
			white oak	---	---	
			yellow-poplar	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
MaD2:						
Madison	Low		loblolly pine	80	114	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	64	100	
			southern red oak	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
MaE2:						
Madison	Moderate		loblolly pine	80	114	loblolly pine, shortleaf pine
	Available water	0.50	northern red oak	---	---	
			shortleaf pine	64	100	
			southern red oak	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
MdB3:						
Madison	Low		loblolly pine	72	100	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	62	86	
			white oak	---	---	
MdD3:						
Madison	Low		loblolly pine	72	100	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	62	86	
			white oak	---	---	
MdE3:						
Madison	Moderate		loblolly pine	72	100	loblolly pine, shortleaf pine
	Available water	0.50	northern red oak	---	---	
			shortleaf pine	62	86	
			white oak	---	---	
MsD:						
Madison	Low		loblolly pine	80	114	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	64	100	
			southern red oak	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
Bethlehem	Low		loblolly pine	67	103	loblolly pine, shortleaf pine
			scarlet oak	---	---	
			chestnut oak	---	---	
			white oak	---	---	
			black oak	---	---	
MsE:						
Madison	Moderate		loblolly pine	80	114	loblolly pine, shortleaf pine
	Available water	0.50	northern red oak	---	---	
			shortleaf pine	64	100	
			southern red oak	---	---	
			white oak	---	---	
			yellow-poplar	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
Bethlehem	Moderate		loblolly pine	67	103	loblolly pine,
	Available water	0.50	scarlet oak	---	---	shortleaf pine
			chestnut oak	---	---	
			white oak	---	---	
			black oak	---	---	
PaB:						
Pacolet	Low		hickory	---	---	loblolly pine,
			loblolly pine	78	114	shortleaf pine
			northern red oak	---	---	
			shortleaf pine	70	114	
			white oak	---	---	
			yellow-poplar	---	---	
PaD2:						
Pacolet	Low		hickory	---	---	loblolly pine,
			loblolly pine	78	114	shortleaf pine
			northern red oak	---	---	
			shortleaf pine	70	114	
			white oak	---	---	
			yellow-poplar	---	---	
PaE2:						
Pacolet	Moderate		hickory	---	---	loblolly pine,
	Available water	0.50	loblolly pine	78	114	shortleaf pine
			northern red oak	---	---	
			shortleaf pine	70	114	
			white oak	---	---	
			yellow-poplar	---	---	
PcB3:						
Pacolet	Low		loblolly pine	70	86	loblolly pine,
			shortleaf pine	60	86	shortleaf pine
			yellow-poplar	---	---	
PcD3:						
Pacolet	Low		loblolly pine	70	86	loblolly pine,
			shortleaf pine	60	86	shortleaf pine
			yellow-poplar	---	---	
PcE3:						
Pacolet	Moderate		loblolly pine	70	86	loblolly pine,
	Available water	0.50	shortleaf pine	60	86	shortleaf pine
			yellow-poplar	---	---	
PdD:						
Pacolet	Low		hickory	---	---	loblolly pine,
			loblolly pine	78	114	shortleaf pine
			northern red oak	---	---	
			shortleaf pine	70	114	
			white oak	---	---	
			yellow-poplar	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
Saw	Low		shortleaf pine	60	100	loblolly pine, shortleaf pine
			loblolly pine	70	100	
			white oak	---	---	
			scarlet oak	---	---	
			northern red oak	---	---	
			post oak	---	---	
PdE:						
Pacolet	Moderate		hickory	---	---	loblolly pine, shortleaf pine
	Available water	0.50	loblolly pine	78	114	
			northern red oak	---	---	
			shortleaf pine	70	114	
			white oak	---	---	
			yellow-poplar	---	---	
Saw	Moderate		shortleaf pine	60	100	loblolly pine, shortleaf pine
	Available water	0.50	loblolly pine	70	100	
			white oak	---	---	
			scarlet oak	---	---	
			northern red oak	---	---	
			post oak	---	---	
PfE:						
Pacolet	Moderate		hickory	---	---	loblolly pine, shortleaf pine
	Available water	0.50	loblolly pine	78	114	
			northern red oak	---	---	
			shortleaf pine	70	114	
			white oak	---	---	
			yellow-poplar	---	---	
Towaliga	High		hickory	---	---	---
	Available water	1.00	loblolly pine	78	114	
			northern red oak	---	---	
			shortleaf pine	70	114	
			white oak	---	---	
			yellow-poplar	---	---	
Prosperity	Moderate		loblolly pine	84	118	loblolly pine, yellow-poplar, shortleaf pine
	Available water	0.50	shortleaf pine	66	101	
			white oak	72	54	
			southern red oak	72	54	
			yellow-poplar	---	---	
			sweetgum	---	---	
			hickory	---	---	
			Virginia pine	---	---	
			black oak	---	---	
Bush River	Moderate		loblolly pine	84	118	loblolly pine, yellow-poplar, shortleaf pine
	Available water	0.50	shortleaf pine	66	101	
			white oak	72	54	
			southern red oak	72	54	
			yellow-poplar	---	---	
			sweetgum	---	---	
			hickory	---	---	
			Virginia pine	---	---	
			black oak	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
RvA:						
Riverview	Low		loblolly pine	100	154	loblolly pine, yellow-poplar, sweetgum
			yellow-poplar	110	124	
			sweetgum	100	138	
SeB:						
Sedgefield	High Wetness	1.00	loblolly pine	80	114	loblolly pine
			sweetgum	---	---	
			yellow-poplar	---	---	
			white oak	---	---	
			willow oak	---	---	
			American elm	---	---	
ToA:						
Toccoa	Low		loblolly pine	90	129	loblolly pine, yellow-poplar
			southern red oak	---	---	
			sweetgum	---	---	
			yellow-poplar	107	114	
WaD:						
Wake	Moderate Available water	0.50	hickory	---	---	loblolly pine, shortleaf pine
			loblolly pine	60	72	
			northern red oak	---	---	
			post oak	---	---	
			shortleaf pine	50	72	
Ashlar	Low		loblolly pine	75	---	loblolly pine, shortleaf pine
			northern red oak	---	---	
			shortleaf pine	65	---	
Rock outcrop	Not rated		---	---	---	---
WeA:						
Wehadkee	High Wetness	1.00	yellow-poplar	100	114	green ash, sweetgum, willow oak, yellow-poplar
			sweetgum	---	---	
			willow oak	---	---	
			green ash	---	---	
			American sycamore	---	---	
			river birch	---	---	
			blackgum	---	---	
WfA:						
Wehadkee	High Wetness	1.00	yellow-poplar	---	---	green ash, sweetgum, willow oak, yellow-poplar
			sweetgum	---	---	
			willow oak	---	---	
			green ash	---	---	
			American sycamore	---	---	
			river birch	---	---	
			blackgum	---	---	
WhB:						
Whistlestop	Low		loblolly pine	80	114	---
			shortleaf pine	66	100	
			yellow-poplar	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
WmE:						
Winnsboro	Moderate		loblolly pine	73	100	loblolly pine
	Available water	0.50	post oak	---	---	
			red maple	---	---	
			shortleaf pine	63	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
Wynott	Moderate		hickory	---	---	loblolly pine
	Available water	0.50	loblolly pine	75	100	
			shortleaf pine	65	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			willow oak	---	---	
			yellow-poplar	---	---	
WnD:						
Wynott	Low		hickory	---	---	loblolly pine
			loblolly pine	75	100	
			shortleaf pine	65	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			willow oak	---	---	
			yellow-poplar	---	---	
Wilkes	Low		hickory	---	---	loblolly pine
			loblolly pine	75	100	
			post oak	---	---	
			shortleaf pine	63	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
Winnsboro	Low		loblolly pine	73	100	loblolly pine
			post oak	---	---	
			red maple	---	---	
			shortleaf pine	63	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
WnE:						
Wynott	Moderate		hickory	---	---	loblolly pine
	Available water	0.50	loblolly pine	75	100	
			shortleaf pine	65	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			willow oak	---	---	
			yellow-poplar	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Value	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
					cu ft/ac	
Wilkes	Moderate		hickory	---	---	loblolly pine
	Available water	0.50	loblolly pine	75	100	
			post oak	---	---	
			shortleaf pine	63	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
Winnsboro	Moderate		loblolly pine	73	100	loblolly pine
	Available water	0.50	post oak	---	---	
			red maple	---	---	
			shortleaf pine	63	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
WoD:						
Wynott	Low		hickory	---	---	loblolly pine
			loblolly pine	75	100	
			shortleaf pine	65	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			willow oak	---	---	
			yellow-poplar	---	---	
Mecklenburg	Low		hickory	---	---	loblolly pine, shortleaf pine
			loblolly pine	79	114	
			northern red oak	---	---	
			shortleaf pine	64	100	
			sweetgum	---	---	
			Virginia pine	62	100	
			white oak	---	---	
			yellow-poplar	97	100	
Winnsboro	Low		loblolly pine	73	100	loblolly pine
			post oak	---	---	
			red maple	---	---	
			shortleaf pine	63	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
WsB:						
Wynott	Low		hickory	---	---	loblolly pine
			loblolly pine	75	100	
			shortleaf pine	65	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			willow oak	---	---	
			yellow-poplar	---	---	

Table 7.—Forestland Productivity—Continued

Map symbol and soil name	Potential for seedling mortality: Rating class and limiting features	Potential for seedling mortality: Value	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Trees to manage
					cu ft/ac	
Winnsboro	Low		loblolly pine	73	100	loblolly pine
			post oak	---	---	
			red maple	---	---	
			shortleaf pine	63	100	
			southern red oak	---	---	
			sweetgum	---	---	
			white oak	---	---	
			yellow-poplar	---	---	
Sedgefield	High Wetness	1.00	loblolly pine	80	114	loblolly pine
			sweetgum	---	---	
			yellow-poplar	---	---	
			white oak	---	---	
			willow oak	---	---	
			American elm	---	---	

Table 8a.—Forestland Management (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.1 to 1.0. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Suitability for log landings		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:						
Ashlar	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
Wake	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
BcB:						
Buncombe	Moderately suited		Slight		Moderately suited	
	Flooding	0.50			Flooding	0.50
BpD:						
Bush River	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
	Wetness	0.50			Wetness	0.50
Prosperity	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
	Wetness	0.50			Wetness	0.50
CaB:						
Cataula	Well suited		Moderate		Well suited	
			Slope/erodibility	0.50		
CdB:						
Cecil	Well suited		Moderate		Well suited	
			Slope/erodibility	0.50		
CeC2:						
Cecil	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
CfB2:						
Cecil	Well suited		Moderate		Well suited	
			Slope/erodibility	0.50		
CgC3:						
Cecil	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
CuC:						
Cecil	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
Urban land	Not rated		Not rated		Not rated	
CwA:						
Chewacla	Poorly suited		Slight		Poorly suited	
	Flooding	1.00			Flooding	1.00
	Wetness	0.50			Wetness	0.50
	Low strength	0.50			Low strength	0.50

Table 8a.—Forestland Management (Part 1)—Continued

Map symbol and soil name	Suitability for log landings		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HaB:						
Hard Labor	Well suited		Moderate Slope/erodibility	 0.50	Well suited	
HwB:						
Hiwassee	Well suited		Slight		Well suited	
LcB:						
Lloyd	Well suited		Moderate Slope/erodibility	 0.50	Well suited	
LdD2:						
Lloyd	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
LfB3:						
Lloyd	Well suited		Moderate Slope/erodibility	 0.50	Well suited	
LfD3:						
Lloyd	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
LfE3:						
Lloyd	Poorly suited Slope	 1.00	Severe Slope/erodibility	 0.95	Poorly suited Slope	 1.00
MaB2:						
Madison	Well suited		Moderate Slope/erodibility	 0.50	Well suited	
MaD2:						
Madison	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
MaE2:						
Madison	Poorly suited Slope	 1.00	Severe Slope/erodibility	 0.95	Poorly suited Slope	 1.00
MdB3:						
Madison	Well suited		Moderate Slope/erodibility	 0.50	Well suited	
MdD3:						
Madison	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
MdE3:						
Madison	Poorly suited Slope	 1.00	Severe Slope/erodibility	 0.95	Poorly suited Slope	 1.00
MsD:						
Madison	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
Bethlehem	Moderately suited Slope	 0.50	Moderate Slope/erodibility	 0.50	Moderately suited Slope	 0.50

Table 8a.—Forestland Management (Part 1)—Continued

Map symbol and soil name	Suitability for log landings		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MsE:						
Madison	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
Bethlehem	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
PaB:						
Pacolet	Well suited		Slight		Well suited	
PaD2:						
Pacolet	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
PaE2:						
Pacolet	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
PcB3:						
Pacolet	Well suited		Moderate		Well suited	
			Slope/erodibility	0.50		
PcD3:						
Pacolet	Moderately suited		Severe		Moderately suited	
	Slope	0.50	Slope/erodibility	0.95	Slope	0.50
PcE3:						
Pacolet	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
PdD:						
Pacolet	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
Saw	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
PdE:						
Pacolet	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
Saw	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
PfE:						
Pacolet	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
Towaliga	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
PnE:						
Pacolet	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
PrE:						
Prosperity	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
	Wetness	0.50			Wetness	0.50

Table 8a.—Forestland Management (Part 1)—Continued

Map symbol and soil name	Suitability for log landings		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Bush River	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
	Wetness	0.50			Wetness	0.50
RvA:						
Riverview	Moderately suited		Slight		Moderately suited	
	Flooding	0.50			Flooding	0.50
	Low strength	0.50			Low strength	0.50
SeB:						
Sedgefield	Moderately suited		Slight		Moderately suited	
	Wetness	0.50			Wetness	0.50
ToA:						
Toccoa	Poorly suited		Slight		Poorly suited	
	Flooding	1.00			Flooding	1.00
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
WaD:						
Wake	Moderately suited		Moderate		Moderately suited	
	Slope	0.50	Slope/erodibility	0.50	Slope	0.50
Ashlar	Moderately suited		Severe		Moderately suited	
	Slope	0.50	Slope/erodibility	0.95	Slope	0.50
Rock outcrop	Not rated		Not rated		Not rated	
WeA:						
Wehadkee	Poorly suited		Slight		Poorly suited	
	Flooding	1.00			Flooding	1.00
	Wetness	1.00			Wetness	1.00
	Low strength	0.50			Low strength	0.50
WfA:						
Wehadkee	Poorly suited		Slight		Poorly suited	
	Ponding	1.00			Ponding	1.00
	Flooding	1.00			Flooding	1.00
	Wetness	1.00			Wetness	1.00
	Low strength	0.50			Low strength	0.50
WhB:						
Whistlestop	Well suited		Slight		Well suited	
WmE:						
Winnsboro	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
Wynott	Poorly suited		Severe		Poorly suited	
	Slope	1.00	Slope/erodibility	0.95	Slope	1.00
WnD:						
Wynott	Moderately suited		Severe		Moderately suited	
	Slope	0.50	Slope/erodibility	0.95	Slope	0.50

Table 8a.—Forestland Management (Part 1)—Continued

Map symbol and soil name	Suitability for log landings		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Wilkes	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
Winnsboro	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
WnE:						
Wynott	Poorly suited Slope	 1.00	Severe Slope/erodibility	 0.95	Poorly suited Slope	 1.00
Wilkes	Poorly suited Slope	 1.00	Severe Slope/erodibility	 0.95	Poorly suited Slope	 1.00
Winnsboro	Poorly suited Slope	 1.00	Severe Slope/erodibility	 0.95	Poorly suited Slope	 1.00
WoD:						
Wynott	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
Mecklenburg	Moderately suited Slope Low strength	 0.50 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope Low strength	 0.50 0.50
Winnsboro	Moderately suited Slope	 0.50	Severe Slope/erodibility	 0.95	Moderately suited Slope	 0.50
WsB:						
Wynott	Well suited		Moderate Slope/erodibility	 0.50	Well suited	
Winnsboro	Well suited		Moderate Slope/erodibility	 0.50	Well suited	
Sedgefield	Moderately suited Wetness	 0.50	Moderate Slope/erodibility	 0.50	Moderately suited Wetness	 0.50

Table 8b.—Forestland Management (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:						
Ashlar	Well suited		Poorly suited Slope	 0.75	Moderately suited Slope	 0.50
Wake	Well suited		Poorly suited Slope	 0.75	Well suited	
BcB:						
Buncombe	Well suited		Well suited		Well suited	
BpD:						
Bush River	Moderately suited Stickiness; high plasticity index	 0.50	Moderately suited Slope Stickiness; high plasticity index	 0.50 0.50	Well suited	
Prosperity	Poorly suited Stickiness; high plasticity index	 0.75	Poorly suited Stickiness; high plasticity index Slope	 0.75 0.50	Well suited	
CaB:						
Cataula	Well suited		Well suited		Well suited	
CdB:						
Cecil	Well suited		Well suited		Well suited	
CeC2:						
Cecil	Well suited		Moderately suited Slope	 0.50	Well suited	
CfB2:						
Cecil	Well suited		Well suited		Well suited	
CgC3:						
Cecil	Well suited		Moderately suited Slope	 0.50	Well suited	
CuC:						
Cecil	Well suited		Moderately suited Slope	 0.50	Well suited	
Urban land	Not rated		Not rated		Not rated	
CwA:						
Chewacla	Well suited		Well suited		Moderately suited Low strength	 0.50
HaB:						
Hard Labor	Well suited		Well suited		Well suited	
HwB:						
Hiwassee	Well suited		Well suited		Well suited	

Table 8b.—Forestland Management (Part 2)—Continued

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LcB:						
Lloyd	Well suited		Well suited		Well suited	
LdD2:						
Lloyd	Well suited		Moderately suited		Well suited	
			Slope	0.50		
LfB3:						
Lloyd	Well suited		Well suited		Well suited	
LfD3:						
Lloyd	Well suited		Moderately suited		Well suited	
			Slope	0.50		
LfE3:						
Lloyd	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
MaB2:						
Madison	Well suited		Well suited		Well suited	
MaD2:						
Madison	Well suited		Moderately suited		Well suited	
			Slope	0.50		
MaE2:						
Madison	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
MdB3:						
Madison	Well suited		Well suited		Well suited	
MdD3:						
Madison	Well suited		Moderately suited		Well suited	
			Slope	0.50		
MdE3:						
Madison	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
MsD:						
Madison	Well suited		Moderately suited		Well suited	
			Slope	0.50		
Bethlehem	Well suited		Moderately suited		Well suited	
			Slope	0.50		
MsE:						
Madison	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
Bethlehem	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
PaB:						
Pacolet	Well suited		Well suited		Well suited	
PaD2:						
Pacolet	Well suited		Moderately suited		Well suited	
			Slope	0.50		

Table 8b.—Forestland Management (Part 2)—Continued

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PaE2:						
Pacolet	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
PcB3:						
Pacolet	Well suited		Well suited		Well suited	
PcD3:						
Pacolet	Well suited		Moderately suited		Well suited	
			Slope	0.50		
PcE3:						
Pacolet	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
PdD:						
Pacolet	Well suited		Moderately suited		Well suited	
			Slope	0.50		
Saw	Well suited		Moderately suited		Well suited	
			Slope	0.50		
PdE:						
Pacolet	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
Saw	Well suited		Poorly suited		Moderately suited	
			Slope	0.75	Slope	0.50
PfE:						
Pacolet	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Slope	0.75	Slope	0.50
			Rock fragments	0.50		
Towaliga	Moderately suited		Poorly suited		Moderately suited	
	Rock fragments	0.50	Slope	0.75	Slope	0.50
			Rock fragments	0.75		
PnE:						
Pacolet	Well suited		Poorly suited		Well suited	
			Slope	0.75		
Urban land	Not rated		Not rated		Not rated	
PrE:						
Prosperity	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.75		
Bush River	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.50		
RvA:						
Riverview	Well suited		Well suited		Moderately suited	
					Low strength	0.50

Table 8b.—Forestland Management (Part 2)—Continued

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SeB:						
Sedgefield	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
ToA:						
Toccoa	Well suited		Well suited		Well suited	
Ud:						
Udorthents	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
			Slope	0.50		
Ur:						
Urban land	Not rated		Not rated		Not rated	
WaD:						
Wake	Well suited		Moderately suited		Well suited	
			Slope	0.50		
Ashlar	Well suited		Moderately suited		Well suited	
			Slope	0.50		
Rock outcrop	Not rated		Not rated		Not rated	
WeA:						
Wehadkee	Moderately suited		Moderately suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
WfA:						
Wehadkee	Poorly suited		Poorly suited		Poorly suited	
	Wetness	0.75	Wetness	0.75	Wetness	1.00
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
WhB:						
Whistlestop	Well suited		Well suited		Well suited	
WmE:						
Winnsboro	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.75		
			Rock fragments	0.50		
Wynott	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.75		
			Rock fragments	0.50		
WnD:						
Wynott	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Slope	0.50		

Table 8b.—Forestland Management (Part 2)—Continued

Map symbol and soil name	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Wilkes	Moderately suited		Moderately suited		Well suited	
	Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
			Slope	0.50		
Winnsboro	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Slope	0.50		
WnE:						
Wynott	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.75		
Wilkes	Moderately suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.50		
Winnsboro	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Slope	0.75	Slope	0.50
			Stickiness; high plasticity index	0.75		
WoD:						
Wynott	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Slope	0.50		
			Rock fragments	0.50		
Mecklenburg	Poorly suited		Poorly suited		Moderately suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
			Slope	0.50		
			Rock fragments	0.50		
Winnsboro	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Slope	0.50		
			Rock fragments	0.50		
WsB:						
Wynott	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Rock fragments	0.50		
Winnsboro	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Rock fragments	0.50		
Sedgefield	Poorly suited		Poorly suited		Well suited	
	Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75		
			Rock fragments	0.50		

Table 9a.—Recreation (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Camp areas		Picnic areas	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:				
Ashlar	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Wake	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00
BcB:				
Buncombe	Very limited		Somewhat limited	
	Flooding	1.00	Too sandy	0.79
	Too sandy	0.79		
BpD:				
Bush River	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Depth to saturated zone	0.56	Depth to saturated zone	0.28
	Slope	0.01	Slope	0.01
Prosperity	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Depth to saturated zone	0.81	Depth to saturated zone	0.48
	Slope	0.01	Slope	0.01
CaB:				
Cataula	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
CdB:				
Cecil	Not limited		Not limited	
CeC2:				
Cecil	Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01
CfB2:				
Cecil	Not limited		Not limited	
CgC3:				
Cecil	Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01
CuC:				
Cecil	Not limited		Not limited	
Urban land	Not Rated		Not Rated	
CwA:				
Chewacla	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40

Table 9a.—Recreation (Part 1)—Continued

Map symbol and soil name	Camp areas		Picnic areas	
	Rating class and limiting features	Value	Rating class and limiting features	Value
HaB:				
Hard Labor----------	Somewhat limited		Somewhat limited	
	Slow water movement	0.96	Slow water movement	0.96
HwB:				
Hiwassee----------	Not limited		Not limited	
LcB:				
Lloyd----------	Not limited		Not limited	
LdD2:				
Lloyd----------	Somewhat limited		Somewhat limited	
	Slope	0.16	Slope	0.16
LfB3:				
Lloyd----------	Not limited		Not limited	
LfD3:				
Lloyd----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
LfE3:				
Lloyd----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
MaB2:				
Madison----------	Not limited		Not limited	
MaD2:				
Madison----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
MaE2:				
Madison----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
MdB3:				
Madison----------	Not limited		Not limited	
MdD3:				
Madison----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
MdE3:				
Madison----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
MsD:				
Madison----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
Bethlehem----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
MsE:				
Madison----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Bethlehem----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00

Table 9a.—Recreation (Part 1)—Continued

Map symbol and soil name	Camp areas		Picnic areas	
	Rating class and limiting features	Value	Rating class and limiting features	Value
PaB:				
Pacolet	Not limited		Not limited	
PaD2:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
PaE2:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
PcB3:				
Pacolet	Not limited		Not limited	
PcD3:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
PcE3:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
PdD:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
Saw	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
PdE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Saw	Very limited		Very limited	
	Slope	1.00	Slope	1.00
PfE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Towaliga	Very limited		Very limited	
	Gravel content	1.00	Gravel content	1.00
	Slope	1.00	Slope	1.00
PnE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Urban land	Not Rated		Not Rated	
PrE:				
Prosperity	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.94	Slow water movement	0.94
	Depth to saturated zone	0.81	Depth to saturated zone	0.48

Table 9a.—Recreation (Part 1)—Continued

Map symbol and soil name	Camp areas		Picnic areas	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Bush River----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.94	Slow water movement	0.94
	Depth to saturated zone	0.56	Depth to saturated zone	0.28
RvA:				
Riverview----------	Very limited		Not limited	
	Flooding	1.00		
SeB:				
Sedgefield----------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Slow water movement	0.94
	Slow water movement	0.94	Depth to saturated zone	0.94
ToA:				
Toccoa----------	Very limited		Somewhat limited	
	Flooding	1.00	Flooding	0.40
Ud:				
Udorthents----------	Not limited		Not limited	
Ur:				
Urban land----------	Not Rated		Not Rated	
WaD:				
Wake----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.37	Slope	0.37
Ashlar----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
Rock outcrop--------	Not Rated		Not Rated	
WeA:				
Wehadkee----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40
WfA:				
Wehadkee----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Flooding	0.40
WhB:				
Whistlestop---------	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Slow water movement	0.15
	Slow water movement	0.15		
WmE:				
Winnsboro----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.94	Slow water movement	0.94
	Large stones content	0.19	Large stones content	0.19

Table 9a.—Recreation (Part 1)—Continued

Map symbol and soil name	Camp areas		Picnic areas	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Wynott	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.94	Slow water movement	0.94
	Large stones content	0.19	Large stones content	0.19
WnD:				
Wynott	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Slope	0.37	Slope	0.37
Wilkes	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.37	Slope	0.37
	Slow water movement	0.15	Slow water movement	0.15
Winnsboro	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Slope	0.37	Slope	0.37
WnE:				
Wynott	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.94	Slow water movement	0.94
Wilkes	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slow water movement	0.15	Slow water movement	0.15
Winnsboro	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.94	Slow water movement	0.94
WoD:				
Wynott	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Slope	0.37	Slope	0.37
	Large stones content	0.19	Large stones content	0.19
Mecklenburg	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Slope	0.37	Slope	0.37
	Large stones content	0.19	Large stones content	0.19
Winnsboro	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Slope	0.37	Slope	0.37
	Large stones content	0.19	Large stones content	0.19
WsB:				
Wynott	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Large stones content	0.19	Large stones content	0.19

Table 9a.—Recreation (Part 1)—Continued

Map symbol and soil name	Camp areas		Picnic areas	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Winnsboro----------	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Slow water movement	0.94
	Large stones content	0.19	Large stones content	0.19
Sedgefield----------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Slow water movement	0.94
	Slow water movement	0.94	Depth to saturated zone	0.94
	Large stones content	0.19	Large stones content	0.19

Table 9b.—Recreation (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Playgrounds		Paths and Trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:				
Ashlar	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.50
	Depth to bedrock	0.84		
	Gravel content	0.05		
Wake	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.18
	Depth to bedrock	1.00		
	Gravel content	0.01		
BcB:				
Buncombe	Somewhat limited		Somewhat limited	
	Too sandy	0.79	Too sandy	0.79
	Flooding	0.60		
	Slope	0.12		
BpD:				
Bush River	Very limited		Somewhat limited	
	Slope	1.00	Depth to saturated zone	0.01
	Slow water movement	0.94		
	Depth to saturated zone	0.56		
Prosperity	Very limited		Somewhat limited	
	Slope	1.00	Depth to saturated zone	0.11
	Slow water movement	0.94		
	Depth to saturated zone	0.81		
	Depth to bedrock	0.10		
CaB:				
Cataula	Somewhat limited		Not limited	
	Slow water movement	0.94		
	Slope	0.50		
CdB:				
Cecil	Somewhat limited		Not limited	
	Slope	0.50		
CeC2:				
Cecil	Very limited		Not limited	
	Slope	1.00		
CfB2:				
Cecil	Somewhat limited		Not limited	
	Slope	0.50		
CgC3:				
Cecil	Very limited		Not limited	
	Slope	1.00		

Table 9b.—Recreation (Part 2)—Continued

Map symbol and soil name	Playgrounds		Paths and Trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value
CuC:				
Cecil	Very limited		Not limited	
	Slope	1.00		
Urban land	Not Rated		Not Rated	
CwA:				
Chewacla	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40
HaB:				
Hard Labor	Somewhat limited		Not limited	
	Slow water movement	0.96		
	Slope	0.50		
HwB:				
Hiwassee	Not limited		Not limited	
LcB:				
Lloyd	Somewhat limited		Not limited	
	Slope	0.50		
LdD2:				
Lloyd	Very limited		Not limited	
	Slope	1.00		
LfB3:				
Lloyd	Somewhat limited		Not limited	
	Slope	0.50		
LfD3:				
Lloyd	Very limited		Not limited	
	Slope	1.00		
LfE3:				
Lloyd	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
MaB2:				
Madison	Somewhat limited		Not limited	
	Slope	0.50		
MaD2:				
Madison	Very limited		Not limited	
	Slope	1.00		
MaE2:				
Madison	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
MdB3:				
Madison	Somewhat limited		Not limited	
	Slope	0.50		
MdD3:				
Madison	Very limited		Not limited	
	Slope	1.00		

Table 9b.—Recreation (Part 2)—Continued

Map symbol and soil name	Playgrounds		Paths and Trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value
MdE3:				
Madison	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
MsD:				
Madison	Very limited		Not limited	
	Slope	1.00		
Bethlehem	Very limited		Not limited	
	Slope	1.00		
	Gravel content	0.99		
	Depth to bedrock	0.01		
MsE:				
Madison	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
Bethlehem	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
	Gravel content	0.99		
	Depth to bedrock	0.01		
PaB:				
Pacolet	Somewhat limited		Not limited	
	Slope	0.50		
PaD2:				
Pacolet	Very limited		Not limited	
	Slope	1.00		
PaE2:				
Pacolet	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.50
PcB3:				
Pacolet	Somewhat limited		Not limited	
	Slope	0.50		
PcD3:				
Pacolet	Very limited		Not limited	
	Slope	1.00		
PcE3:				
Pacolet	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.50
PdD:				
Pacolet	Very limited		Not limited	
	Slope	1.00		
Saw	Very limited		Not limited	
	Slope	1.00		
	Depth to bedrock	0.29		
PdE:				
Pacolet	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.50
Saw	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.50
	Depth to bedrock	0.29		

Table 9b.—Recreation (Part 2)—Continued

Map symbol and soil name	Playgrounds		Paths and Trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value
PfE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Towaliga	Very limited		Very limited	
	Gravel content	1.00	Slope	1.00
	Slope	1.00		
PnE:				
Pacolet	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.18
Urban land	Not Rated		Not Rated	
PrE:				
Prosperity	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.50
	Slow water movement	0.94	Depth to saturated zone	0.11
	Depth to saturated zone	0.81		
	Depth to bedrock	0.10		
Bush River	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.50
	Slow water movement	0.94	Depth to saturated zone	0.01
	Depth to saturated zone	0.56		
RvA:				
Riverview	Somewhat limited		Not limited	
	Flooding	0.60		
SeB:				
Sedgefield	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Slow water movement	0.94		
ToA:				
Toccoa	Very limited		Somewhat limited	
	Flooding	1.00	Flooding	0.40
Ud:				
Udorthents	Somewhat limited		Not limited	
	Slope	0.88		
Ur:				
Urban land	Not Rated		Not Rated	
WaD:				
Wake	Very limited		Not limited	
	Slope	1.00		
	Depth to bedrock	1.00		
	Gravel content	0.01		
Ashlar	Very limited		Not limited	
	Slope	1.00		
	Depth to bedrock	0.84		
	Gravel content	0.05		
Rock outcrop	Not Rated		Not Rated	

Table 9b.—Recreation (Part 2)—Continued

Map symbol and soil name	Playgrounds		Paths and Trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value
WeA:				
Wehadkee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40
WfA:				
Wehadkee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	0.40
WhB:				
Whistlestop	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.15		
WmE:				
Winnsboro	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
	Slow water movement	0.94	Large stones content	0.19
	Large stones content	0.19		
Wynott	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
	Slow water movement	0.94	Large stones content	0.19
	Large stones content	0.19		
	Depth to bedrock	0.03		
	Gravel content	0.01		
WnD:				
Wynott	Very limited		Not limited	
	Slope	1.00		
	Slow water movement	0.94		
	Depth to bedrock	0.03		
	Gravel content	0.01		
Wilkes	Very limited		Not limited	
	Slope	1.00		
	Depth to bedrock	1.00		
	Slow water movement	0.15		
	Gravel content	0.01		
Winnsboro	Very limited		Not limited	
	Slope	1.00		
	Slow water movement	0.94		
WnE:				
Wynott	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
	Slow water movement	0.94		
	Depth to bedrock	0.03		
	Gravel content	0.01		

Table 9b.—Recreation (Part 2)—Continued

Map symbol and soil name	Playgrounds		Paths and Trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Wilkes	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
	Depth to bedrock	1.00		
	Slow water movement	0.15		
	Gravel content	0.01		
Winnsboro	Very limited		Somewhat limited	
	Slope	1.00	Slope	0.92
	Slow water movement	0.94		
WoD:				
Wynott	Very limited		Somewhat limited	
	Slope	1.00	Large stones content	0.19
	Slow water movement	0.94		
	Large stones content	0.19		
	Depth to bedrock	0.03		
	Gravel content	0.01		
Mecklenburg	Very limited		Somewhat limited	
	Slope	1.00	Large stones content	0.19
	Slow water movement	0.94		
	Large stones content	0.19		
Winnsboro	Very limited		Somewhat limited	
	Slope	1.00	Large stones content	0.19
	Slow water movement	0.94		
	Large stones content	0.19		
WsB:				
Wynott	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Large stones content	0.19
	Slope	0.50		
	Large stones content	0.19		
	Depth to bedrock	0.03		
	Gravel content	0.01		
Winnsboro	Somewhat limited		Somewhat limited	
	Slow water movement	0.94	Large stones content	0.19
	Slope	0.50		
	Large stones content	0.19		
Sedgefield	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Slow water movement	0.94	Large stones content	0.19
	Slope	0.50		
	Large stones content	0.19		

Table 10a.—Building Site Development (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Dwellings without basements		Dwellings with basements	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:				
Ashlar	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.84	Depth to hard bedrock	1.00
Wake	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
BcB:				
Buncombe	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
BpD:				
Bush River	Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	0.56	Shrink-swell	1.00
	Slope	0.01	Slope	0.01
Prosperity	Somewhat limited		Very limited	
	Depth to saturated zone	0.81	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.01	Depth to soft bedrock	0.10
			Slope	0.01
CaB:				
Cataula	Not limited		Somewhat limited	
			Depth to saturated zone	0.97
CdB:				
Cecil	Not limited		Not limited	
CeC2:				
Cecil	Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01
CfB2:				
Cecil	Not limited		Not limited	
CgC3:				
Cecil	Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01
CuC:				
Cecil	Not limited		Not limited	
Urban land	Not rated		Not rated	

Table 10a.—Building Site Development (Part 1)—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value
CwA:				
Chewacla	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HaB:				
Hard Labor	Not limited		Somewhat limited	
			Depth to saturated zone	0.97
HwB:				
Hiwassee	Not limited		Not limited	
LcB:				
Lloyd	Not limited		Not limited	
LdD2:				
Lloyd	Somewhat limited		Somewhat limited	
	Slope	0.16	Slope	0.16
LfB3:				
Lloyd	Not limited		Not limited	
LfD3:				
Lloyd	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
LfE3:				
Lloyd	Very limited		Very limited	
	Slope	1.00	Slope	1.00
MaB2:				
Madison	Not limited		Not limited	
MaD2:				
Madison	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
MaE2:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
MdB3:				
Madison	Not limited		Not limited	
MdD3:				
Madison	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
MdE3:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
MsD:				
Madison	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37

Table 10a.—Building Site Development (Part 1)—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value
Bethlehem	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
			Depth to soft bedrock	0.01
MsE:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Bethlehem	Very limited		Very limited	
	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.01
PaB:				
Pacolet	Not limited		Not limited	
PaD2:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
PaE2:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
PcB3:				
Pacolet	Not limited		Not limited	
PcD3:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
PcE3:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
PdD:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
Saw	Somewhat limited		Very limited	
	Slope	0.37	Depth to hard bedrock	1.00
	Depth to hard bedrock	0.29	Slope	0.37
PdE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Saw	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.29	Depth to hard bedrock	1.00
PfE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Towaliga	Very limited		Very limited	
	Slope	1.00	Slope	1.00

Table 10a.—Building Site Development (Part 1)—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value
PnE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
Urban land	Not rated		Not rated	
Pq:				
Pits, quarry	Not rated		Not rated	
PrE:				
Prosperity	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.81	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to soft bedrock	0.10
Bush River	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Shrink-swell	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	0.56	Shrink-swell	1.00
RvA:				
Riverview	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.61
SeB:				
Sedgefield	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00
ToA:				
Toccoa	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.53
Ud:				
Udorthents	Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50
Ur:				
Urban land	Not rated		Not rated	
WaD:				
Wake	Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
	Slope	0.37	Slope	0.37
Ashlar	Somewhat limited		Very limited	
	Depth to hard bedrock	0.84	Depth to hard bedrock	1.00
	Slope	0.37	Slope	0.37
Rock outcrop	Not rated		Not rated	

Table 10a.—Building Site Development (Part 1)—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value
WeA:				
Wehadkee	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
WfA:				
Wehadkee	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
WhB:				
Whistlestop	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00
WmE:				
Winnsboro	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Shrink-swell	1.00	Shrink-swell	1.00
Wynott	Very limited		Very limited	
	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.03
WnD:				
Wynott	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
			Depth to soft bedrock	0.03
Wilkes	Somewhat limited		Very limited	
	Shrink-swell	0.50	Depth to soft bedrock	1.00
	Depth to soft bedrock	0.50	Depth to hard bedrock	0.84
	Slope	0.37	Shrink-swell	0.50
			Slope	0.37
Winnsboro	Very limited		Very limited	
	Shrink-swell	1.00	Shrink-swell	1.00
	Slope	0.37	Slope	0.37
WnE:				
Wynott	Very limited		Very limited	
	Slope	1.00	Slope	1.00
			Depth to soft bedrock	0.03
Wilkes	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to soft bedrock	1.00
	Depth to soft bedrock	0.50	Depth to hard bedrock	0.84
			Shrink-swell	0.50

Table 10a.—Building Site Development (Part 1)—Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Winnsboro----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Shrink-swell	1.00	Shrink-swell	1.00
WoD:				
Wynott----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
			Depth to soft bedrock	0.03
Mecklenburg---------	Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Slope	0.37
	Slope	0.37		
Winnsboro----------	Very limited		Very limited	
	Shrink-swell	1.00	Shrink-swell	1.00
	Slope	0.37	Slope	0.37
WsB:				
Wynott----------	Not limited		Somewhat limited	
			Depth to soft bedrock	0.03
Winnsboro----------	Very limited		Very limited	
	Shrink-swell	1.00	Shrink-swell	1.00
Sedgefield----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00

Table 10b.—Building Site Development (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Local roads and streets		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:				
Ashlar	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Depth to hard bedrock	0.84	Slope	1.00
			Cutbanks cave	1.00
Wake	Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
BcB:				
Buncombe	Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00
			Flooding	0.60
BpD:				
Bush River	Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Too clayey	0.14
	Depth to saturated zone	0.28	Cutbanks cave	0.10
	Slope	0.01	Slope	0.01
Prosperity	Somewhat limited		Very limited	
	Low strength	0.76	Depth to saturated zone	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10
	Depth to saturated zone	0.48	Depth to soft bedrock	0.10
	Slope	0.01	Too clayey	0.04
			Slope	0.01
CaB:				
Cataula	Somewhat limited		Somewhat limited	
	Low strength	0.50	Depth to saturated zone	0.97
			Dense layer	0.50
			Too clayey	0.28
			Cutbanks cave	0.10
CdB:				
Cecil	Somewhat limited		Somewhat limited	
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
CeC2:				
Cecil	Somewhat limited		Somewhat limited	
	Low strength	0.50	Too clayey	0.28
	Slope	0.01	Cutbanks cave	0.10
			Slope	0.01

Table 10b.—Building Site Development (Part 2)—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
CfB2:				
Cecil	Somewhat limited		Somewhat limited	
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
CgC3:				
Cecil	Somewhat limited		Somewhat limited	
	Low strength	0.50	Too clayey	0.28
	Slope	0.01	Cutbanks cave	0.10
			Slope	0.01
CuC:				
Cecil	Somewhat limited		Somewhat limited	
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
Urban land	Not Rated		Not rated	
CwA:				
Chewacla	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.80
	Low strength	1.00	Cutbanks cave	0.10
HaB:				
Hard Labor	Somewhat limited		Somewhat limited	
	Low strength	0.50	Depth to saturated zone	0.97
			Too clayey	0.12
			Cutbanks cave	0.10
HwB:				
Hiwassee	Not limited		Somewhat limited	
			Cutbanks cave	0.10
LcB:				
Lloyd	Somewhat limited		Somewhat limited	
	Low strength	0.50	Cutbanks cave	0.10
			Too clayey	0.06
LdD2:				
Lloyd	Somewhat limited		Somewhat limited	
	Low strength	0.50	Slope	0.16
	Slope	0.16	Cutbanks cave	0.10
			Too clayey	0.06
LfB3:				
Lloyd	Somewhat limited		Somewhat limited	
	Low strength	0.50	Cutbanks cave	0.10
			Too clayey	0.06
LfD3:				
Lloyd	Somewhat limited		Somewhat limited	
	Low strength	0.50	Slope	0.37
	Slope	0.37	Cutbanks cave	0.10
			Too clayey	0.06

Table 10b.—Building Site Development (Part 2)—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
LfE3:				
Lloyd	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Cutbanks cave	0.10
			Too clayey	0.06
MaB2:				
Madison	Somewhat limited		Somewhat limited	
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
MaD2:				
Madison	Somewhat limited		Somewhat limited	
	Low strength	0.50	Slope	0.37
	Slope	0.37	Too clayey	0.28
			Cutbanks cave	0.10
MaE2:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
MdB3:				
Madison	Not limited		Somewhat limited	
			Too clayey	0.28
			Cutbanks cave	0.10
MdD3:				
Madison	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
			Too clayey	0.28
			Cutbanks cave	0.10
MdE3:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
			Too clayey	0.28
			Cutbanks cave	0.10
MsD:				
Madison	Somewhat limited		Somewhat limited	
	Low strength	0.50	Slope	0.37
	Slope	0.37	Too clayey	0.28
			Cutbanks cave	0.10
Bethlehem	Somewhat limited		Very limited	
	Low strength	0.50	Cutbanks cave	1.00
	Slope	0.37	Slope	0.37
			Too clayey	0.28
			Depth to soft bedrock	0.01
MsE:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10

Table 10b.—Building Site Development (Part 2)—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value
Bethlehem----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Cutbanks cave	1.00
			Too clayey	0.28
			Depth to soft bedrock	0.01
PaB:				
Pacolet----------	Somewhat limited		Somewhat limited	
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
PaD2:				
Pacolet----------	Somewhat limited		Somewhat limited	
	Low strength	0.50	Slope	0.37
	Slope	0.37	Too clayey	0.28
			Cutbanks cave	0.10
PaE2:				
Pacolet----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
PcB3:				
Pacolet----------	Not limited		Somewhat limited	
			Too clayey	0.28
			Cutbanks cave	0.10
PcD3:				
Pacolet----------	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
			Too clayey	0.28
			Cutbanks cave	0.10
PcE3:				
Pacolet----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
			Too clayey	0.28
			Cutbanks cave	0.10
PdD:				
Pacolet----------	Somewhat limited		Somewhat limited	
	Low strength	0.50	Slope	0.37
	Slope	0.37	Too clayey	0.28
			Cutbanks cave	0.10
Saw----------	Somewhat limited		Very limited	
	Low strength	0.50	Depth to hard bedrock	1.00
	Slope	0.37	Slope	0.37
	Depth to hard bedrock	0.29	Too clayey	0.28
			Cutbanks cave	0.10
PdE:				
Pacolet----------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10

Table 10b.—Building Site Development (Part 2)—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Saw	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Low strength	0.50	Slope	1.00
	Depth to hard bedrock	0.29	Too clayey	0.28
			Cutbanks cave	0.10
PfE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
Towaliga	Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00
			Slope	1.00
			Too clayey	0.06
PnE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.50	Too clayey	0.28
			Cutbanks cave	0.10
Urban land	Not Rated		Not rated	
PrE:				
Prosperity	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	0.76	Depth to saturated zone	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10
	Depth to saturated zone	0.48	Depth to soft bedrock	0.10
			Too clayey	0.04
Bush River	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Too clayey	0.14
	Depth to saturated zone	0.28	Cutbanks cave	0.10
RvA:				
Riverview	Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.61
			Flooding	0.60
			Cutbanks cave	0.10
SeB:				
Sedgefield	Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Too clayey	0.28
	Depth to saturated zone	0.94	Cutbanks cave	0.10

Table 10b.—Building Site Development (Part 2)—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
ToA:				
Toccoa	Very limited		Somewhat limited	
	Flooding	1.00	Flooding	0.80
			Depth to saturated zone	0.53
			Cutbanks cave	0.10
Ud:				
Udorthents	Very limited		Somewhat limited	
	Low strength	1.00	Cutbanks cave	0.10
	Shrink-swell	0.50		
Ur:				
Urban land	Not Rated		Not rated	
WaD:				
Wake	Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
	Slope	0.37	Slope	0.37
Ashlar	Somewhat limited		Very limited	
	Depth to hard bedrock	0.84	Depth to hard bedrock	1.00
	Slope	0.37	Cutbanks cave	1.00
			Slope	0.37
Rock outcrop	Not Rated		Not rated	
WeA:				
Wehadkee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Cutbanks cave	1.00
	Low strength	1.00	Flooding	0.80
WfA:				
Wehadkee	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Cutbanks cave	1.00
	Low strength	1.00	Flooding	0.80
WhB:				
Whistlestop	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Too clayey	0.99
	Flooding	0.40	Cutbanks cave	0.10
WmE:				
Winnsboro	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Shrink-swell	1.00	Too clayey	0.28
	Low strength	1.00	Cutbanks cave	0.10
Wynott	Very limited		Very limited	
	Slope	1.00	Slope	1.00
			Cutbanks cave	0.10
			Depth to soft bedrock	0.03

Table 10b.—Building Site Development (Part 2)—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
WnD:				
Wynott	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
			Cutbanks cave	0.10
			Depth to soft bedrock	0.03
Wilkes	Very limited		Very limited	
	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
	Low strength	1.00	Depth to hard bedrock	0.84
	Shrink-swell	0.50	Slope	0.37
	Slope	0.37	Cutbanks cave	0.10
Winnsboro	Very limited		Somewhat limited	
	Shrink-swell	1.00	Slope	0.37
	Low strength	1.00	Too clayey	0.28
	Slope	0.37	Cutbanks cave	0.10
WnE:				
Wynott	Very limited		Very limited	
	Slope	1.00	Slope	1.00
			Cutbanks cave	0.10
			Depth to soft bedrock	0.03
Wilkes	Very limited		Very limited	
	Slope	1.00	Depth to soft bedrock	1.00
	Depth to soft bedrock	1.00	Slope	1.00
	Low strength	1.00	Depth to hard bedrock	0.84
	Shrink-swell	0.50		
Winnsboro	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Shrink-swell	1.00	Too clayey	0.28
	Low strength	1.00	Cutbanks cave	0.10
WoD:				
Wynott	Somewhat limited		Somewhat limited	
	Slope	0.37	Slope	0.37
			Cutbanks cave	0.10
			Depth to soft bedrock	0.03
Mecklenburg	Very limited		Somewhat limited	
	Low strength	1.00	Too clayey	0.50
	Shrink-swell	0.50	Slope	0.37
	Slope	0.37	Cutbanks cave	0.10
Winnsboro	Very limited		Somewhat limited	
	Shrink-swell	1.00	Slope	0.37
	Low strength	1.00	Too clayey	0.28
	Slope	0.37	Cutbanks cave	0.10
WsB:				
Wynott	Not limited		Somewhat limited	
			Cutbanks cave	0.10
			Depth to soft bedrock	0.03

Table 10b.—Building Site Development (Part 2)—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Winnsboro----------	Very limited		Somewhat limited	
	Shrink-swell	1.00	Too clayey	0.28
	Low strength	1.00	Cutbanks cave	0.10
Sedgefield----------	Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Too clayey	0.28
	Depth to saturated zone	0.94	Cutbanks cave	0.10

Table 11.—Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:				
Ashlar	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00
Wake	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00
BcB:				
Buncombe	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Seepage, bottom layer	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.08
BpD:				
Bush River	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.83
	Depth to bedrock	0.86	Depth to soft bedrock	0.61
	Slope	0.01		
Prosperity	Very limited		Very limited	
	Slow water movement	1.00	Depth to soft bedrock	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to saturated zone	0.94
	Slope	0.01		
CaB:				
Cataula	Very limited		Somewhat limited	
	Slow water movement	1.00	Seepage	0.50
	Depth to saturated zone	1.00	Slope	0.32
			Depth to saturated zone	0.01
CdB:				
Cecil	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
CeC2:				
Cecil	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
	Slope	0.01	Seepage	0.50

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CfB2:				
Cecil	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
CgC3:				
Cecil	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.01		
CuC:				
Cecil	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Slope	0.92
			Seepage	0.50
Urban land	Not rated		Not rated	
CwA:				
Chewacla	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.50	Seepage	0.50
HaB:				
Hard Labor	Very limited		Somewhat limited	
	Slow water movement	1.00	Seepage	0.50
			Slope	0.32
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
HwB:				
Hiwassee	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
LcB:				
Lloyd	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
LdD2:				
Lloyd	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.16		
LfB3:				
Lloyd	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
LfD3:				
Lloyd	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.37		

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
LfE3:				
Lloyd	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
MaB2:				
Madison	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
MaD2:				
Madison	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.37		
MaE2:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
MdB3:				
Madison	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
MdD3:				
Madison	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
	Slope	0.37	Seepage	0.50
MdE3:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
MsD:				
Madison	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.37		
Bethlehem	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slow water movement	0.50		
			Slope	1.00
	Slope	0.37	Seepage	0.50
MsE:				
Madison	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Bethlehem	Very limited		Very limited	
	Slope	1.00	Depth to soft bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
PaB:				
Pacolet	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
PaD2:				
Pacolet	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.37		
PaE2:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
PcB3:				
Pacolet	Somewhat limited		Somewhat limited	
	Slow water movement	0.50	Seepage	0.50
			Slope	0.32
PcD3:				
Pacolet	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.37		
PcE3:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
PdD:				
Pacolet	Somewhat limited		Very limited	
	Slow water movement	0.50	Slope	1.00
			Seepage	0.50
	Slope	0.37		
Saw	Very limited		Very limited	
	Slow water movement	1.00	Depth to hard bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Slope	0.37	Seepage	1.00
PdE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Saw	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00
	Slow water movement	0.50		
PfE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
Towaliga	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	1.00
PnE:				
Pacolet	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	0.50	Seepage	0.50
Urban land	Not rated		Not rated	
PrE:				
Prosperity	Very limited		Very limited	
	Slow water movement	1.00	Depth to soft bedrock	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.94
	Depth to bedrock	1.00		
Bush River	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.83
	Slope	1.00	Depth to soft bedrock	0.61
	Depth to bedrock	0.86		
RvA:				
Riverview	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.71
	Slow water movement	0.50	Seepage	0.50
SeB:				
Sedgefield	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage, bottom layer	1.00		

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
ToA:				
Toccoa	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Seepage, bottom layer	1.00	Seepage	1.00
	Depth to saturated zone	0.97	Depth to saturated zone	0.52
Ud:				
Udorthents	Somewhat limited		Somewhat limited	
	Slow water movement	0.82	Slope	0.68
			Seepage	0.18
Ur:				
Urban land	Not rated		Not rated	
WaD:				
Wake	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Seepage, bottom layer	1.00	Seepage	1.00
	Slope	0.37	Slope	1.00
Ashlar	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Seepage, bottom layer	1.00	Seepage	1.00
	Slope	0.37	Slope	1.00
Rock outcrop	Not rated		Not rated	
WeA:				
Wehadkee	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage, bottom layer	1.00	Depth to saturated zone	1.00
	Slow water movement	0.50		
WfA:				
Wehadkee	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage, bottom layer	1.00	Depth to saturated zone	1.00
	Slow water movement	0.50		
WhB:				
Whistlestop	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Slow water movement	1.00	Seepage	0.50
	Flooding	0.40	Flooding	0.40

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
WmE:				
Winnsboro	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Slope	1.00	Depth to soft bedrock	0.05
	Depth to bedrock	0.47		
Wynott	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Slow water movement	1.00		
WnD:				
Wynott	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slow water movement	1.00	Slope	1.00
	Slope	0.37		
Wilkes	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	0.37	Slope	1.00
			Depth to hard bedrock	0.84
Winnsboro	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to bedrock	0.47	Depth to soft bedrock	0.05
	Slope	0.37		
WnE:				
Wynott	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Slow water movement	1.00		
Wilkes	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
			Depth to hard bedrock	0.84
Winnsboro	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Slope	1.00	Depth to soft bedrock	0.05
	Depth to bedrock	0.47		
WoD:				
Wynott	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slow water movement	1.00	Slope	1.00
	Slope	0.37		

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Mecklenburg---------	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Slope	0.37	Seepage	0.50
Winnsboro----------	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to bedrock	0.47	Depth to soft bedrock	0.05
	Slope	0.37		
WsB:				
Wynott----------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slow water movement	1.00	Slope	0.32
Winnsboro----------	Very limited		Somewhat limited	
	Slow water movement	1.00	Slope	0.32
	Depth to bedrock	0.47	Depth to soft bedrock	0.05
Sedgefield----------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage, bottom layer	1.00	Slope	0.32

Table 12.—Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of sand		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:						
Ashlar	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Slope	0.50	Too sandy	0.00
					Depth to bedrock	0.16
					Too acid	0.88
Wake	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Slope	0.82	Depth to bedrock	0.00
					Too sandy	0.01
					Too acid	0.98
					Rock fragments	0.99
BcB:						
Buncombe	Fair		Good		Poor	
	Thickest layer	0.00			Too sandy	0.00
	Bottom layer	0.59			Too acid	0.88
BpD:						
Bush River	Poor		Poor		Poor	
	Thickest layer	0.00	Low strength	0.00	Too clayey	0.00
	Bottom layer	0.00	Shrink-swell	0.38	Wetness depth	0.44
			Depth to bedrock	0.39		
			Wetness depth	0.44		
Prosperity	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Bottom layer	0.00	Low strength	0.24	Wetness depth	0.29
			Wetness depth	0.29	Depth to bedrock	0.90
			Shrink-swell	0.87		
CaB:						
Cataula	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00	Wetness depth	0.99	Too acid	0.88
					Wetness depth	0.99
CdB:						
Cecil	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88
CeC2:						
Cecil	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88
CfB2:						
Cecil	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88

Table 12.—Construction Materials—Continued

Map symbol and soil name	Potential source of sand		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CgC3:						
Cecil	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88
CuC:						
Cecil	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88
Urban land	Not Rated		Not rated		Not Rated	
CwA:						
Chewacla	Poor		Poor		Poor	
	Thickest layer	0.00	Wetness depth	0.00	Wetness depth	0.00
	Bottom layer	0.00	Low strength	0.99	Too clayey	0.81
HaB:						
Hard Labor	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00	Wetness depth	0.99	Too acid	0.88
					Wetness depth	0.99
HwB:						
Hiwassee	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00				
LcB:						
Lloyd	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00				
LdD2:						
Lloyd	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00			Slope	0.84
LfB3:						
Lloyd	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00				
LfD3:						
Lloyd	Poor		Fair		Poor	
	Thickest layer	0.00	Low strength	0.50	Too clayey	0.00
	Bottom layer	0.00			Slope	0.63
LfE3:						
Lloyd	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.08	Slope	0.00
	Bottom layer	0.00	Low strength	0.50	Too clayey	0.00
MaB2:						
Madison	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88

Table 12.—Construction Materials—Continued

Map symbol and soil name	Potential source of sand		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MaD2:						
Madison	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Slope	0.63
					Too acid	0.88
MaE2:						
Madison	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.08	Slope	0.00
	Bottom layer	0.00			Too clayey	0.00
					Too acid	0.88
MdB3:						
Madison	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88
MdD3:						
Madison	Poor		Good		Fair	
	Thickest layer	0.00			Too clayey	0.55
	Bottom layer	0.00			Slope	0.63
					Too acid	0.88
MdE3:						
Madison	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.08	Slope	0.00
	Bottom layer	0.00			Too clayey	0.55
					Too acid	0.88
MsD:						
Madison	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Slope	0.63
					Too acid	0.88
Bethlehem	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Bottom layer	0.00	Low strength	0.50	Rock fragments	0.50
					Slope	0.63
					Too acid	0.88
					Depth to bedrock	0.99
MsE:						
Madison	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.08	Slope	0.00
	Bottom layer	0.00			Too clayey	0.00
					Too acid	0.88
Bethlehem	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Slope	0.08	Too clayey	0.00
			Low strength	0.50	Rock fragments	0.50
					Too acid	0.88
					Depth to bedrock	0.99
PaB:						
Pacolet	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88

Table 12.—Construction Materials—Continued

Map symbol and soil name	Potential source of sand		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PaD2:						
Pacolet	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Slope	0.63
					Too acid	0.88
PaE2:						
Pacolet	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.50	Slope	0.00
	Bottom layer	0.00			Too clayey	0.00
					Too acid	0.88
PcB3:						
Pacolet	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Too acid	0.88
PcD3:						
Pacolet	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Slope	0.63
					Too acid	0.88
PcE3:						
Pacolet	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.50	Slope	0.00
	Bottom layer	0.00			Too clayey	0.00
					Too acid	0.88
PdD:						
Pacolet	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Slope	0.63
					Too acid	0.88
Saw	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Bottom layer	0.00	Low strength	0.50	Slope	0.63
					Depth to bedrock	0.71
					Too acid	0.88
PdE:						
Pacolet	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.50	Slope	0.00
	Bottom layer	0.00			Too clayey	0.00
					Too acid	0.88
Saw	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Slope	0.50	Too clayey	0.00
			Low strength	0.50	Depth to bedrock	0.71
					Too acid	0.88
PfE:						
Pacolet	Poor		Poor		Poor	
	Thickest layer	0.00	Slope	0.00	Too clayey	0.00
	Bottom layer	0.00			Slope	0.00
					Too acid	0.88

Table 12.—Construction Materials—Continued

Map symbol and soil name	Potential source of sand		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Towaliga	Poor		Poor		Poor	
	Thickest layer	0.00	Slope	0.00	Rock fragments	0.00
	Bottom layer	0.00			Slope	0.00
					Too acid	0.88
PnE:						
Pacolet	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.82	Too clayey	0.00
	Bottom layer	0.00			Slope	0.00
					Too acid	0.88
Urban land	Not Rated		Not rated		Not Rated	
			Slope	0.82		
PrE:						
Prosperity	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Low strength	0.24	Too clayey	0.00
			Wetness depth	0.29	Wetness depth	0.29
			Slope	0.50	Too acid	0.76
			Shrink-swell	0.87	Depth to bedrock	0.90
Bush River	Poor		Poor		Poor	
	Thickest layer	0.00	Low strength	0.00	Slope	0.00
	Bottom layer	0.00	Shrink-swell	0.38	Too clayey	0.00
			Depth to bedrock	0.39	Wetness depth	0.44
			Wetness depth	0.44		
			Slope	0.50		
RvA:						
Riverview	Poor		Fair		Fair	
	Thickest layer	0.00	Low strength	0.24	Too clayey	0.47
	Bottom layer	0.00				
SeB:						
Sedgefield	Poor		Poor		Poor	
	Thickest layer	0.00	Low strength	0.00	Too clayey	0.00
	Bottom layer	0.00	Wetness depth	0.04	Wetness depth	0.04
			Shrink-swell	0.42		
ToA:						
Toccoa	Poor		Good		Good	
	Thickest layer	0.00				
	Bottom layer	0.00				
Ud:						
Udorthents	Poor		Poor		Fair	
	Thickest layer	0.00	Low strength	0.00	Too clayey	0.39
	Bottom layer	0.00	Shrink-swell	0.87		
Ur:						
Urban land	Not Rated		Not rated		Not Rated	

Table 12.—Construction Materials—Continued

Map symbol and soil name	Potential source of sand		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WaD:						
Wake	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Bottom layer	0.00			Too sandy	0.01
					Slope	0.63
					Too acid	0.98
					Rock fragments	0.99
Ashlar	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Too sandy	0.00
	Bottom layer	0.00			Depth to bedrock	0.16
					Slope	0.63
					Too acid	0.88
Rock outcrop	Not Rated		Not rated		Not Rated	
			Depth to bedrock	0.00		
WeA:						
Wehadkee	Poor		Poor		Poor	
	Thickest layer	0.00	Wetness depth	0.00	Wetness depth	0.00
	Bottom layer	0.00			Too clayey	0.47
					Too acid	0.88
WfA:						
Wehadkee	Poor		Poor		Poor	
	Thickest layer	0.00	Wetness depth	0.00	Wetness depth	0.00
	Bottom layer	0.00			Too clayey	0.47
					Too acid	0.88
WhB:						
Whistlestop	Poor		Poor		Poor	
	Thickest layer	0.00	Low strength	0.00	Too clayey	0.00
	Bottom layer	0.00			Too acid	0.95
WmE:						
Winnsboro	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.08	Slope	0.00
	Bottom layer	0.00	Depth to bedrock	0.95	Too clayey	0.00
			Shrink-swell	0.98		
Wynott	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Slope	0.08	Depth to bedrock	0.97
					Rock fragments	0.99
WnD:						
Wynott	Poor		Poor		Fair	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.63
	Bottom layer	0.00			Depth to bedrock	0.97
					Rock fragments	0.99
Wilkes	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Bottom layer	0.00	Low strength	0.00	Too clayey	0.09
			Shrink-swell	0.87	Slope	0.63
					Rock fragments	0.99
Winnsboro	Poor		Fair		Poor	
	Thickest layer	0.00	Depth to bedrock	0.95	Too clayey	0.00
	Bottom layer	0.00	Shrink-swell	0.98	Slope	0.63

Table 12.—Construction Materials—Continued

Map symbol and soil name	Potential source of sand		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WnE:						
Wynott	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Slope	0.08	Depth to bedrock	0.97
					Rock fragments	0.99
Wilkes	Poor		Poor		Poor	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.00
	Bottom layer	0.00	Low strength	0.00	Depth to bedrock	0.00
			Slope	0.08	Too clayey	0.09
			Shrink-swell	0.87	Rock fragments	0.99
Winnsboro	Poor		Fair		Poor	
	Thickest layer	0.00	Slope	0.08	Slope	0.00
	Bottom layer	0.00	Depth to bedrock	0.95	Too clayey	0.00
			Shrink-swell	0.98		
WoD:						
Wynott	Poor		Poor		Fair	
	Thickest layer	0.00	Depth to bedrock	0.00	Slope	0.63
	Bottom layer	0.00			Depth to bedrock	0.97
					Rock fragments	0.99
Mecklenburg	Poor		Good		Poor	
	Thickest layer	0.00			Too clayey	0.00
	Bottom layer	0.00			Slope	0.63
					Hard to reclaim (rock fragments)	0.98
Winnsboro	Poor		Fair		Poor	
	Thickest layer	0.00	Depth to bedrock	0.95	Too clayey	0.00
	Bottom layer	0.00	Shrink-swell	0.98	Slope	0.63
WsB:						
Wynott	Poor		Poor		Fair	
	Thickest layer	0.00	Depth to bedrock	0.00	Depth to bedrock	0.97
	Bottom layer	0.00			Rock fragments	0.99
Winnsboro	Poor		Fair		Poor	
	Thickest layer	0.00	Depth to bedrock	0.95	Too clayey	0.00
	Bottom layer	0.00	Shrink-swell	0.98		
Sedgefield	Poor		Poor		Poor	
	Thickest layer	0.00	Low strength	0.00	Too clayey	0.00
	Bottom layer	0.00	Wetness depth	0.04	Wetness depth	0.04
			Shrink-swell	0.42		

Table 13.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pond reservoir areas		Embankments, dikes and levees	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AwE:				
Ashlar	Very limited		Somewhat limited	
	Seepage	1.00	Thin layer	0.96
	Depth to bedrock	0.96	Seepage	0.21
	Slope	0.77		
Wake	Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00
	Slope	0.56	Seepage	0.10
BcB:				
Buncombe	Very limited		Somewhat limited	
	Seepage	1.00	Seepage	0.34
BpD:				
Bush River	Somewhat limited		Very limited	
	Seepage	0.05	Depth to saturated zone	1.00
	Depth to bedrock	0.01	Hard to pack	0.25
			Thin layer	0.16
			Seepage	0.01
Prosperity	Somewhat limited		Very limited	
	Depth to bedrock	0.04	Depth to saturated zone	1.00
			Thin layer	0.70
CaB:				
Cataula	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.85
			Depth to saturated zone	0.53
CdB:				
Cecil	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.93
CeC2:				
Cecil	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.93
CfB2:				
Cecil	Somewhat limited		Not limited	
	Seepage	0.70		
CgC3:				
Cecil	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.70
CuC:				
Cecil	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.93
Urban land	Not limited		Not rated	

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes and levees	
	Rating class and limiting features	Value	Rating class and limiting features	Value
CwA:				
Chewacla	Somewhat limited		Very limited	
	Seepage	0.70	Depth to saturated zone	1.00
			Piping	0.05
HaB:				
Hard Labor	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.70
			Depth to saturated zone	0.53
HwB:				
Hiwassee	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.87
LcB:				
Lloyd	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.75
LdD2:				
Lloyd	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.64
	Slope	0.01		
LfB3:				
Lloyd	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.80
LfD3:				
Lloyd	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.81
	Slope	0.01		
LfE3:				
Lloyd	Somewhat limited		Somewhat limited	
	Slope	0.96	Piping	0.81
	Seepage	0.70		
MaB2:				
Madison	Somewhat limited		Somewhat limited	
	Seepage	0.70	Seepage	0.04
MaD2:				
Madison	Somewhat limited		Somewhat limited	
	Seepage	0.70	Seepage	0.04
	Slope	0.01		
MaE2:				
Madison	Somewhat limited		Somewhat limited	
	Slope	0.96	Seepage	0.04
	Seepage	0.70		
MdB3:				
Madison	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.91
			Seepage	0.03

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes and levees	
	Rating class and limiting features	Value	Rating class and limiting features	Value
MdD3:				
Madison	Somewhat limited		Somewhat limited	
	Seepage	0.70	Seepage	0.03
	Slope	0.01		
MdE3:				
Madison	Somewhat limited		Somewhat limited	
	Slope	0.96	Seepage	0.03
	Seepage	0.70		
MsD:				
Madison	Somewhat limited		Somewhat limited	
	Seepage	0.70	Seepage	0.04
	Slope	0.01		
Bethlehem	Somewhat limited		Somewhat limited	
	Seepage	0.70	Thin layer	0.56
	Depth to bedrock	0.02		
	Slope	0.01		
MsE:				
Madison	Somewhat limited		Somewhat limited	
	Slope	0.96	Seepage	0.04
	Seepage	0.70		
Bethlehem	Somewhat limited		Somewhat limited	
	Slope	0.96	Thin layer	0.56
	Seepage	0.70		
	Depth to bedrock	0.02		
PaB:				
Pacolet	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.98
			Seepage	0.03
PaD2:				
Pacolet	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.98
	Slope	0.01	Seepage	0.03
PaE2:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.77	Piping	0.98
	Seepage	0.70	Seepage	0.03
PcB3:				
Pacolet	Somewhat limited		Somewhat limited	
	Seepage	0.70	Seepage	0.03
PcD3:				
Pacolet	Somewhat limited		Somewhat limited	
	Seepage	0.70	Seepage	0.03
	Slope	0.01		
PcE3:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.77	Seepage	0.03
	Seepage	0.70		

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes and levees	
	Rating class and limiting features	Value	Rating class and limiting features	Value
PdD:				
Pacolet	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.98
	Slope	0.01	Seepage	0.03
Saw	Very limited		Somewhat limited	
	Seepage	1.00	Piping	0.89
	Depth to bedrock	0.81	Thin layer	0.81
	Slope	0.01		
PdE:				
Pacolet	Somewhat limited		Somewhat limited	
	Slope	0.77	Piping	0.98
	Seepage	0.70	Seepage	0.03
Saw	Very limited		Somewhat limited	
	Seepage	1.00	Piping	0.89
	Depth to bedrock	0.81	Thin layer	0.81
	Slope	0.77		
PfE:				
Pacolet	Very limited		Somewhat limited	
	Slope	0.99	Piping	0.98
	Seepage	0.70	Seepage	0.03
Towaliga	Very limited		Somewhat limited	
	Seepage	1.00	Seepage	0.03
	Slope	0.99		
PnE:				
Pacolet	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.98
	Slope	0.56	Seepage	0.03
Urban land	Somewhat limited		Not rated	
	Slope	0.56		
Pq:				
Pits, quarry	Very limited		Not rated	
	Depth to bedrock	1.00		
	Slope	1.00		
PrE:				
Prosperity	Somewhat limited		Very limited	
	Slope	0.77	Depth to saturated zone	1.00
	Seepage	0.05		
	Depth to bedrock	0.04	Thin layer	0.70
Bush River	Somewhat limited		Very limited	
	Slope	0.77	Depth to saturated zone	1.00
	Seepage	0.05		
	Depth to bedrock	0.01	Hard to pack	0.25
			Thin layer	0.16
			Seepage	0.01
RvA:				
Riverview	Somewhat limited		Very limited	
	Seepage	0.70	Piping	1.00

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes and levees	
	Rating class and limiting features	Value	Rating class and limiting features	Value
SeB:				
Sedgefield	Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00
			Hard to pack	0.42
ToA:				
Toccoa	Very limited		Very limited	
	Seepage	1.00	Piping	1.00
			Seepage	0.03
Ud:				
Udorthents	Somewhat limited		Not limited	
	Seepage	0.43		
Ur:				
Urban land	Not Rated		Not rated	
WaD:				
Wake	Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00
	Slope	0.01	Seepage	0.10
Ashlar	Very limited		Somewhat limited	
	Seepage	1.00	Thin layer	0.96
	Depth to bedrock	0.96	Seepage	0.21
	Slope	0.01		
Rock outcrop	Very limited		Not rated	
	Depth to bedrock	1.00		
	Slope	0.01		
WeA:				
Wehadkee	Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00
			Piping	0.93
			Seepage	0.10
WfA:				
Wehadkee	Very limited		Very limited	
	Seepage	1.00	Ponding	1.00
			Depth to saturated zone	1.00
			Piping	0.93
			Seepage	0.10
WhB:				
Whistlestop	Somewhat limited		Very limited	
	Seepage	0.70	Ponding	1.00
			Piping	0.87
			Seepage	0.08
WmE:				
Winnsboro	Somewhat limited		Somewhat limited	
	Slope	0.96	Thin layer	0.01
	Seepage	0.05		
	Depth to bedrock	0.01		

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes and levees	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Wynott	Somewhat limited		Somewhat limited	
	Slope	0.96	Thin layer	0.61
	Seepage	0.05	Seepage	0.04
	Depth to bedrock	0.02		
WnD:				
Wynott	Somewhat limited		Somewhat limited	
	Seepage	0.05	Thin layer	0.61
	Depth to bedrock	0.02	Seepage	0.04
	Slope	0.01		
Wilkes	Somewhat limited		Very limited	
	Depth to bedrock	0.53	Thin layer	1.00
	Slope	0.01		
Winnsboro	Somewhat limited		Somewhat limited	
	Seepage	0.05	Thin layer	0.01
	Slope	0.01		
	Depth to bedrock	0.01		
WnE:				
Wynott	Somewhat limited		Somewhat limited	
	Slope	0.96	Thin layer	0.61
	Seepage	0.05	Seepage	0.04
	Depth to bedrock	0.02		
Wilkes	Somewhat limited		Very limited	
	Slope	0.96	Thin layer	1.00
	Depth to bedrock	0.53		
Winnsboro	Somewhat limited		Somewhat limited	
	Slope	0.96	Thin layer	0.01
	Seepage	0.05		
	Depth to bedrock	0.01		
WoD:				
Wynott	Somewhat limited		Somewhat limited	
	Seepage	0.05	Thin layer	0.61
	Depth to bedrock	0.02	Seepage	0.04
	Slope	0.01		
Mecklenburg	Somewhat limited		Somewhat limited	
	Seepage	0.70	Piping	0.24
	Slope	0.01		
Winnsboro	Somewhat limited		Somewhat limited	
	Seepage	0.05	Thin layer	0.01
	Slope	0.01		
	Depth to bedrock	0.01		
WsB:				
Wynott	Somewhat limited		Somewhat limited	
	Seepage	0.05	Thin layer	0.61
	Depth to bedrock	0.02	Seepage	0.04
Winnsboro	Somewhat limited		Somewhat limited	
	Seepage	0.05	Thin layer	0.01
	Depth to bedrock	0.01		

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes and levees	
	Rating class and limiting features	Value	Rating class and limiting features	Value
Sedgefield----------	Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00
			Hard to pack	0.46

Table 14.—Engineering Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AwE:												
Ashlar----------	0-7	Coarse sandy loam, sandy loam	SC-SM, SM	A-1-b, A-2-4, A-4	0	0-2	84-100	76-100	46-70	23-40	17-28	2-10
	7-15	Coarse sandy loam, sandy loam	SC-SM, SM	A-1-b, A-2-4, A-4	0	0-2	88-100	83-100	50-70	25-40	16-27	2-10
	15-25	Coarse sandy loam, loamy coarse sand	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-2	92-100	84-100	42-75	4-40	16-27	2-10
	25-29	Bedrock			---	---	---	---	---	---	---	---
Wake----------	0-4	Loamy sand	SC-SM, SM	A-1-b, A-2-4, A-4	0-2	0-2	85-100	78-100	39-75	12-40	0-15	NP-7
	4-14	Loamy sand, sandy loam, coarse sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0-2	0-2	85-100	78-100	39-75	12-40	0-15	NP-7
	14-18	Bedrock			---	---	---	---	---	---	---	---
BcB:												
Buncombe--------	0-10	Loamy sand, sand	SM, SC-SM	A-2-4, A-3	0	0	98-100	98-100	50-75	9-30	0-15	NP-7
	10-60	Sand, loamy sand	SM, SP-SM, SC-SM	A-2-4, A-3	0	0	98-100	98-100	50-75	5-30	0-15	NP-7
BpD:												
Bush River------	0-5	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0-5	85-100	85-100	51-90	26-70	15-35	NP-10
	5-16	Sandy clay loam	CL, SC	A-6, A-7	0	0-5	85-100	85-100	70-90	38-70	30-49	15-26
	16-40	Clay, sandy clay, clay loam	CH	A-7	0	0-5	85-100	85-100	73-97	56-75	50-85	24-50
	40-48	Sandy clay loam, clay loam, sandy loam	CL, SC	A-6, A-7	0	0-5	85-100	85-100	70-90	38-70	30-49	15-26
	48-60	Bedrock			---	---	---	---	---	---	---	---
Prosperity------	0-3	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0-5	85-100	85-100	55-90	15-70	15-35	NP-10
	3-6	Sandy loam	CH	A-7	0	0-5	85-100	85-100	73-90	55-70	50-85	24-50
	6-25	Sandy clay, clay loam	CL, SC	A-6, A-7	0	0-5	85-100	85-100	70-90	27-58	30-49	15-26
	25-35	Sandy clay			0	0	100	100	82-88	54-60	47-53	29-33
	35-60	Bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
CaB:												
Cataula---------	0-4	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	96-100	92-100	55-70	28-40	17-35	1-6
	4-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	96-100	92-100	55-70	28-40	16-32	1-6
	7-23	Clay, sandy clay	MH, ML	A-7-6	0	0	98-100	95-100	81-100	43-95	42-66	13-22
	23-30	Clay, sandy clay	MH, ML	A-7-6	0	0	98-100	95-100	81-100	43-95	42-66	13-22
	30-40	Clay, sandy clay	MH, ML	A-7-6	0	0	98-100	96-100	82-100	43-95	42-66	13-22
	40-52	Clay loam, sandy clay, sandy clay loam	SC-SM, ML	A-7-6, A-2-6, A-6	0	0	98-100	95-100	86-100	33-80	29-49	6-14
	52-60	Sandy clay loam, sandy loam	SM, SC-SM	A-7-6, A-6, A-2-4	0	0	98-100	95-100	57-90	29-55	16-44	1-13
CdB:												
Cecil----------	0-8	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0-5	90-100	84-100	50-70	25-40	17-35	1-6
	8-11	Sandy clay loam, clay loam	SC-SM, ML	A-6, A-7-6, A-2-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14
	11-37	Sandy clay, clay	MH, ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	42-66	13-22
	37-48	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-5	95-100	92-100	74-90	32-55	29-44	6-13
	48-60	Sandy clay loam, sandy loam	SM, SC-SM	A-7-6, A-2-4, A-6	0-1	0-5	95-100	92-100	55-90	28-55	16-44	1-13
CeC2:												
Cecil----------	0-8	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0-5	90-100	84-100	50-70	25-40	17-35	1-6
	8-11	Sandy clay loam, clay loam	SC-SM, ML	A-6, A-7-6, A-2-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14
	11-37	Sandy clay, clay	MH, ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	42-66	13-22
	37-48	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-5	95-100	92-100	74-90	32-55	29-44	6-13
	48-60	Sandy clay loam, sandy loam	SM, SC-SM	A-2-4, A-4, A-6	0-1	0-5	95-100	92-100	55-90	28-55	16-44	1-13
CfB2:												
Cecil----------	0-6	Sandy clay loam	SC-SM	A-6, A-2-6, A-7-6	0	0-5	90-100	84-100	67-90	29-55	30-47	6-13
	6-52	Clay, sandy clay	MH, ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	42-66	13-22
	52-60	Clay loam, sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
CgC3:												
Cecil----------	0-4	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0	0-5	90-100	84-100	67-90	29-55	30-47	6-13
	4-43	Clay, sandy clay	MH, ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	42-66	13-22
	43-50	Sandy clay loam	SC-SM	A-6, A-2-6, A-7-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	50-60	Sandy clay loam, sandy loam	SC-SM, SM	A-6, A-2-4, A-7-6	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
CuC:												
Cecil----------	0-8	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0-5	90-100	84-100	50-70	25-40	17-35	1-6
	8-11	Sandy clay loam, clay loam	SC-SM, ML	A-6, A-7-6, A-2-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14
	11-37	Sandy clay, clay	MH, ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	42-66	13-22
	37-48	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-5	95-100	92-100	74-90	32-55	29-44	6-13
	48-60	Sandy clay loam, sandy loam	SM, SC-SM	A-2-4, A-6, A-7-6	0-1	0-5	95-100	92-100	55-90	28-55	16-44	1-13
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
CwA:												
Chewacla--------	0-6	Loam	CL, CL-ML	A-4	0	0	98-100	97-100	82-95	58-75	20-45	3-18
	6-25	Clay loam, sandy clay loam, silty clay loam, loam	CL, CL-ML, SM, SC-SM, SC	A-4, A-6, A-7-6	0	0	98-100	97-100	78-100	34-95	19-52	3-28
	25-30	Clay loam, sandy clay loam, loam	CL, CL-ML, SC, SC-SM, SM	A-4, A-6	0	0	98-100	97-100	78-100	34-95	19-47	3-24
	30-40	Sandy clay loam, clay loam	CL, CL-ML, SC, SC-SM, SM	A-4, A-6, A-2-4	0	0	98-100	97-100	49-100	15-95	17-52	2-28
	40-60	Sandy clay loam, sandy clay, clay, sandy loam, loamy sand, silty clay, silty clay loam	CL, CL-ML, SC, SC-SM, SM	A-2-4, A-2-5, A-2-7, A-2-6, A-6, A-7-6	0	0	98-100	97-100	92-100	15-95	16-66	2-43
HaB:												
Hard Labor------	0-9	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0-8	97-100	92-100	55-70	28-40	17-47	1-6
	9-15	Sandy clay loam, sandy loam	SC-SM, SM	A-6, A-4, A-2-4	0	0-8	97-100	92-100	55-90	28-55	16-45	1-13
	15-36	Sandy clay, clay	MH, ML	A-7-6	0	0-8	95-100	91-100	77-100	41-95	42-66	13-22
	36-50	Clay, sandy clay	MH, ML	A-7-6	0	0-8	95-100	91-100	77-100	41-95	42-66	13-22
	50-60	Sandy clay, sandy clay loam	SC-SM	A-6, A-7-6	0	0-8	95-100	92-100	78-95	32-60	29-61	6-21

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HwB:												
Hiwassee--------	0-7	Sandy loam	SM	A-2, A-4	0	0-2	100	100	60-70	30-40	9-16	NP-4
	7-37	Clay, sandy clay loam, clay loam	CL	A-7-5	0	0-2	98-100	96-100	82-100	43-80	45-55	13-22
	37-60	Sandy clay loam, sandy clay, clay loam	SC-SM	A-2-4	0	0-2	84-100	78-100	62-95	27-75	20-32	7-15
LcB:												
Lloyd----------	0-10	Sandy loam	SM, SC-SM	A-4, A-2-4	0	0-5	90-100	84-100	50-70	25-40	17-35	1-6
	10-55	Clay, sandy clay, clay loam	ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	35-66	9-22
	55-60	Sandy clay loam, clay loam	ML, SC-SM	A-2-6, A-6, A-7-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14
LdD2:												
Lloyd----------	0-4	Sandy loam	SM, SC-SM	A-4, A-2-4	0	0-5	90-100	84-100	50-70	25-40	17-35	1-6
	4-50	Clay, sandy clay, clay loam	ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	35-66	9-22
	50-60	Sandy clay loam, clay loam	ML, SC-SM	A-2-6, A-6, A-7-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14
LfB3:												
Lloyd----------	0-4	Sandy clay loam	SC-SM	A-7-6, A-6, A-2-6	0	0-5	90-100	84-100	67-90	29-55	30-47	6-13
	4-35	Clay, sandy clay, clay loam	ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	35-66	9-22
	35-59	Sandy clay loam, clay loam	SC-SM, ML	A-2-6, A-6, A-7-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14
	59-60	Sandy clay loam, sandy loam	CL, ML, SC-SM, SM, CL-ML	A-4, A-6, A-7-6	0	0-5	90-100	85-99	60-90	36-70	18-44	4-20
LfD3:												
Lloyd----------	0-4	Sandy clay loam	SC-SM	A-7-6, A-6, A-2-6	0	0-5	90-100	84-100	67-90	29-55	30-47	6-13
	4-35	Clay, sandy clay, clay loam	ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	35-66	9-22
	35-60	Sandy clay loam, clay loam	SC-SM, ML	A-2-6, A-6, A-7-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
LfE3:												
Lloyd----------	0-4	Sandy clay loam	SC-SM	A-7-6, A-6, A-2-6	0	0-5	90-100	84-100	67-90	29-55	30-47	6-13
	4-35	Clay, sandy clay, clay loam	ML	A-7-6	0	0-5	95-100	91-100	77-100	41-95	35-66	9-22
	35-60	Sandy clay loam, clay loam	SC-SM, ML	A-2-6, A-6, A-7-6	0	0-5	95-100	92-100	74-100	32-80	29-49	6-14
MaB2:												
Madison---------	0-5	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0-3	90-100	84-100	50-70	25-40	17-35	1-6
	5-24	Sandy clay, clay	ML, CL, MH	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	24-38	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	38-50	Sandy clay loam, sandy loam	SC-SM, SM	A-7-6, A-6, A-2-4	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
	50-60	Sandy loam, sandy clay loam	SM, SC-SM	A-2-4	0	0-3	95-100	92-100	55-70	28-40	16-31	1-6
MaD2:												
Madison---------	0-5	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0-3	90-100	84-100	50-70	25-40	17-35	1-6
	5-24	Sandy clay, clay	ML, CL, MH	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	24-38	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	38-50	Sandy clay loam, sandy loam	SC-SM, SM	A-7-6, A-6, A-2-4	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
	50-60	Sandy loam, sandy clay loam	SM, SC-SM	A-2-4	0	0-3	95-100	92-100	55-70	28-40	16-31	1-6
MaE2:												
Madison---------	0-5	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0-3	90-100	84-100	50-70	25-40	17-35	1-6
	5-24	Sandy clay, clay	ML, CL, MH	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	24-38	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	38-50	Sandy clay loam, sandy loam	SC-SM, SM	A-7-6, A-6, A-2-4	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
	50-60	Sandy loam, sandy clay loam	SM, SC-SM	A-2-4	0	0-3	95-100	92-100	55-70	28-40	16-31	1-6

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MdB3:												
Madison---------	0-6	Sandy clay loam	SC-SM	A-7-6, A-6, A-2-6	0	0-3	90-100	85-100	67-90	29-55	30-47	6-13
	6-20	Clay, sandy clay	ML, CL, MH	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	20-45	Sandy clay loam	SC-SM	A-7-6, A-2-6, A-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	45-60	Sandy loam, sandy clay loam	SC-SM, SM	A-4, A-7-6, A-2-4	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
MdD3:												
Madison---------	0-4	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0	0-3	90-100	85-100	67-90	29-55	30-47	6-13
	4-20	Clay, sandy clay	ML, CL, MH	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	20-45	Sandy clay loam	SC-SM	A-7-6, A-2-6, A-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	45-60	Sandy loam, sandy clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
MdE3:												
Madison---------	0-4	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0	0-3	90-100	85-100	67-90	29-55	30-47	6-13
	4-20	Clay, sandy clay	ML, CL, MH	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	20-45	Sandy clay loam	SC-SM	A-7-6, A-2-6, A-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	45-60	Sandy loam, sandy clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
MsD:												
Madison---------	0-5	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0-3	90-100	84-100	50-70	25-40	17-35	1-6
	5-24	Sandy clay, clay	MH, ML, CL	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	24-38	Sandy clay loam	SC-SM	A-7-6, A-2-6, A-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	38-50	Sandy clay loam, sandy loam	SC-SM, SM	A-7-6, A-6, A-2-4	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
	50-60	Sandy loam, sandy clay loam	SM, SC-SM	A-2-4	0	0-3	95-100	92-100	55-70	28-40	16-31	1-6
Bethlehem-------	0-8	Gravelly sandy loam	SM, SC-SM	A-1-b, A-2-4	0-2	0-7	65-100	51-100	31-70	15-40	17-35	NP-6
	8-12	Sandy clay loam	SC-SM	A-2-6, A-6	0	0	65-100	52-100	42-90	18-55	29-45	6-13
	12-33	Sandy clay, clay, clay loam	ML	A-7-5	0	0	65-100	51-100	43-100	23-95	42-66	9-22
	33-38	Gravelly sandy loam, very gravelly sandy loam, sandy loam	SM, SC-SM	A-2-4, A-1-a	0-2	0-12	55-85	43-76	26-53	13-30	16-31	NP-6
	38-60	Bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MsE:												
Madison---------	0-5	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0-3	90-100	84-100	50-70	25-40	17-35	1-6
	5-24	Sandy clay, clay	MH, CL, ML	A-7-6	0	0-3	95-100	91-100	77-100	41-95	42-66	15-24
	24-38	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0	0-3	95-100	92-100	74-90	32-55	29-44	6-13
	38-50	Sandy clay loam, sandy loam	SC-SM, SM	A-7-6, A-6, A-2-4	0	0-3	95-100	92-100	74-90	28-55	16-44	1-13
	50-60	Sandy loam, sandy clay loam	SM, SC-SM	A-2-4	0	0-3	95-100	92-100	55-70	28-40	16-31	1-6
Bethlehem-------	0-8	Gravelly sandy loam	SM, SC-SM	A-1-b, A-2-4	0-2	0-7	65-100	51-100	31-70	15-40	17-35	NP-6
	8-12	Sandy clay loam	SC-SM	A-2-6, A-6	0	0	65-100	52-100	42-90	18-55	29-45	6-13
	12-33	Sandy clay, clay, clay loam	ML	A-7-5	0	0	65-100	51-100	43-100	23-95	42-66	9-22
	33-38	Gravelly sandy loam, very gravelly sandy loam, sandy loam	SM, SC-SM	A-2-4, A-1-a	0-2	0-12	55-85	43-76	26-53	13-30	16-31	NP-6
	38-60	Bedrock			---	---	---	---	---	---	---	---
PaB:												
Pacolet---------	0-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	90-100	84-100	50-70	25-40	17-35	1-6
	7-25	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	25-33	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	33-54	Sandy clay loam, sandy loam, clay loam	ML, SM, SC-SM	A-2-4, A-7-6, A-6	0-1	0-2	95-100	92-100	83-100	28-80	16-48	1-14
	54-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
PaD2:												
Pacolet---------	0-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	90-100	84-100	50-70	25-40	17-35	1-6
	7-25	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	25-33	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	33-54	Sandy clay loam, sandy loam, clay loam	ML, SM, SC-SM	A-2-4, A-7-6, A-6	0-1	0-2	95-100	92-100	83-100	28-80	16-48	1-14
	54-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
PaE2:												
Pacolet---------	0-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	90-100	84-100	50-70	25-40	17-35	1-6
	7-25	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	25-33	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	33-54	Sandy clay loam, sandy loam, clay loam	ML, SM, SC-SM	A-2-4, A-7-6, A-6	0-1	0-2	95-100	92-100	83-100	28-80	16-48	1-14
	54-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
PcB3:												
Pacolet---------	0-6	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0-1	0-1	90-100	84-100	67-90	29-55	30-44	6-13
	6-24	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	24-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
PcD3:												
Pacolet---------	0-6	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0-1	0-1	90-100	84-100	67-90	29-55	30-44	6-13
	6-24	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	24-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
PcE3:												
Pacolet---------	0-6	Sandy clay loam	SC-SM	A-2-6, A-6, A-7-6	0-1	0-1	90-100	84-100	67-90	29-55	30-44	6-13
	6-24	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	24-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
PdD:												
Pacolet---------	0-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	90-100	84-100	50-70	25-40	17-35	1-6
	7-25	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	25-33	Sandy clay loam	SC-SM	A-7-6, A-2-6, A-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	33-54	Sandy clay loam, sandy loam, clay loam	ML, SM, SC-SM	A-2-4, A-7-6, A-6	0-1	0-2	95-100	92-100	83-100	28-80	16-48	1-14
	54-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-7-6, A-2-4, A-4	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Saw----------	0-6	Sandy loam	SC-SM, SM	A-4, A-2-4	0	0-8	90-100	83-100	50-70	25-40	17-35	1-6
	6-11	Sandy loam	SM, SC-SM	A-2-4, A-4	0-1	0-8	90-100	83-100	50-70	25-40	16-32	1-6
	11-28	Clay, sandy clay	CL, ML, MH	A-7-6	0-1	0-8	94-100	91-100	77-100	41-95	42-66	15-24
	28-32	Sandy clay loam, sandy loam	SC-SM, SM	A-6, A-2-4, A-4	0	0-8	90-100	83-100	50-90	25-55	16-44	1-13
	>32	Bedrock			---	---	---	---	---	---	---	---
PdE:												
Pacolet---------	0-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	90-100	84-100	50-70	25-40	17-35	1-6
	7-25	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	25-33	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	33-54	Sandy clay loam, sandy loam, clay loam	ML, SM, SC-SM	A-2-4, A-7-6, A-6	0-1	0-2	95-100	92-100	83-100	28-80	16-48	1-14
	54-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
Saw----------	0-6	Sandy loam	SC-SM, SM	A-4, A-2-4	0	0-8	90-100	83-100	50-70	25-40	17-35	1-6
	6-11	Sandy loam	SM, SC-SM	A-2-4, A-4	0-1	0-8	90-100	83-100	50-70	25-40	16-32	1-6
	11-28	Clay, sandy clay	CL, ML, MH	A-7-6	0-1	0-8	94-100	91-100	77-100	41-95	42-66	15-24
	28-32	Sandy clay loam, sandy loam	SC-SM, SM	A-6, A-2-4, A-4	0	0-8	90-100	83-100	50-90	25-55	16-44	1-13
	32-36	Bedrock			---	---	---	---	---	---	---	---
PfE:												
Pacolet---------	0-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	90-100	84-100	50-70	25-40	17-35	1-6
	7-25	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	25-33	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	33-54	Sandy clay loam, sandy loam, clay loam	ML, SM, SC-SM	A-2-4, A-7-6, A-6	0-1	0-2	95-100	92-100	83-100	28-80	16-48	1-14
	54-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Towaliga--------	0-3	Extremely gravelly loam	SC-SM, SM, GC-GM, GM	A-2-4, A-4	0-2	0-15	38-62	19-50	16-48	11-38	19-41	1-9
	3-11	Very gravelly loam	SC-SM, SM, GC-GM, GM	A-2-4, A-4	0-2	0-20	38-62	19-50	16-48	11-38	18-38	1-9
	11-33	Very gravelly sandy loam, very gravelly sandy clay loam, very gravelly loam, very gravelly silt loam	SC-SM, SM, SP-SM, CL-ML, ML, GC-GM, GM, GP-GM	A-2-4, A-4	0-2	0-30	38-82	19-76	11-76	6-68	16-44	1-13
	33-47	Clay, sandy clay, clay loam	ML	A-7-6	0-2	0-21	86-100	82-100	70-100	37-95	35-66	9-22
	47-64	Clay loam, sandy clay loam	ML, SC-SM	A-7-6, A-2-6, A-6	0-2	0-21	88-100	83-100	66-100	29-80	29-49	6-14
PnE:												
Pacolet---------	0-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0-1	0-2	90-100	84-100	50-70	25-40	17-35	1-6
	7-25	Sandy clay, clay	CL, ML, MH	A-7-6	0-1	0-1	95-100	91-100	77-100	41-95	42-66	15-24
	25-33	Sandy clay loam	SC-SM	A-6, A-7-6, A-2-6	0-1	0-2	95-100	92-100	74-90	32-55	29-44	6-13
	33-54	Sandy clay loam, sandy loam, clay loam	ML, SM, SC-SM	A-2-4, A-7-6, A-6	0-1	0-2	95-100	92-100	83-100	28-80	16-48	1-14
	54-60	Sandy loam, sandy clay loam, clay loam	SC-SM, SM	A-2-4, A-4, A-7-6	0-1	0-2	95-100	92-100	55-90	28-55	16-44	1-13
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
PrE:												
Prosperity------	0-3	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0-5	85-100	85-100	51-95	26-75	15-35	NP-10
	3-6	Sandy loam, clay loam	CH	A-7	0	0-5	85-100	85-100	73-97	56-86	50-85	24-50
	6-25	Sandy clay, sandy clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	85-100	85-100	70-90	38-70	30-49	15-26
	25-35	Sandy clay, clay	CH, CL	A-7-6	0	0	85-100	85-100	73-95	56-86	47-53	29-33
	35-60	Bedrock			---	---	---	---	---	---	---	---
Bush River------	0-5	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0-5	85-100	85-100	51-95	26-75	15-35	NP-10
	5-16	Sandy clay loam	CL, SC	A-6, A-7	0	0-5	85-100	85-100	70-90	38-70	30-49	15-26
	16-40	Clay, clay loam	CH	A-7	0	0-5	85-100	85-100	73-97	56-86	50-85	24-50
	40-48	Sandy clay loam, clay loam, sandy loam	CL, SC	A-6, A-7	0	0-5	85-100	85-100	70-90	38-70	30-49	15-26
	48-60	Bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RvA:												
Riverview-------	0-4	Loam	CL-ML	A-4	0	0	100	100	82-95	58-75	20-45	3-12
	4-16	Clay loam	SC-SM	A-4	0	0	100	100	78-100	34-95	15-30	3-14
	16-32	Clay loam, sandy clay loam, loamy fine sand	SC-SM, SM, CL-ML, CL, ML	A-4, A-6	0	0	100	100	75-100	45-80	15-30	3-14
	32-45	Clay loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	60-80	15-30	3-14
	45-80	Clay loam, silty clay loam, sandy clay loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	60-95	20-40	3-20
SeB:												
Sedgefield------	0-6	Sandy loam	CL, ML, SC, SM	A-2, A-4, A-6	0	0-5	90-100	85-100	50-100	30-60	15-35	NP-12
	6-11	Fine sandy loam	CL, ML, SC, SM	A-2, A-4, A-6	0	0-5	90-100	85-100	50-100	30-60	15-35	NP-12
	11-16	Sandy clay, clay loam, clay	CH, CL	A-7	0	0-5	95-100	95-100	73-93	60-85	45-85	25-60
	16-32	Sandy clay, clay loam, clay	CH, CL	A-7	0	0-5	95-100	95-100	73-93	60-85	45-85	25-60
	32-40	Clay	CH, CL	A-7-6	0	0	95-100	95-100	73-93	60-85	45-85	25-60
	40-50	Clay, sandy clay	CL, CH	A-7-6	0	0	95-100	95-100	73-93	60-85	45-85	25-60
	50-60	Clay loam, sandy clay, loam, gravelly sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	90-100	50-100	45-95	30-70	0-20	NP-5
ToA:												
Toccoa----------	0-4	Fine sandy loam, sandy loam, loam	SC-SM, SM	A-4	0	0	98-100	97-100	68-85	39-55	18-37	2-13
	4-60	Sandy loam, fine sandy loam, loamy sand, loam	ML, SM, SC-SM, SC	A-2-4, A-4	0	0	98-100	97-100	58-95	29-75	18-41	2-19
Ud:												
Udorthents------	0-60	Sandy clay loam, sandy loam, clay loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-7	0-2	0-3	95-100	90-100	70-98	30-90	22-60	6-36
Ur:												
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WaD:												
Wake----------	0-4	Loamy sand	SC-SM, SM	A-2-4, A-4, A-1-b	0-2	0-2	85-100	78-100	39-75	12-40	0-15	NP-7
	4-14	Loamy sand, sandy loam, coarse sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0-2	0-2	85-100	78-100	39-75	12-40	0-15	NP-7
	14-18	Bedrock			---	---	---	---	---	---	---	---
Ashlar----------	0-7	Coarse sandy loam, sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0	0-2	84-100	76-100	46-70	23-40	17-28	2-10
	7-15	Coarse sandy loam, sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0	0-2	88-100	83-100	50-70	25-40	16-27	2-10
	15-25	Coarse sandy loam, loamy coarse sand	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-2	92-100	84-100	42-75	4-40	16-27	2-10
	25-29	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Bedrock			---	---	---	---	---	---	---	---
WeA:												
Wehadkee--------	0-6	Loam	CL-ML, CL, ML	A-4, A-6	0	0	98-100	97-100	82-95	58-75	22-47	3-18
	6-27	Clay loam, loam, sandy clay loam, silt loam, silty clay loam	CL, CL-ML, ML, SC, SC-SM, SM	A-7-6, A-6, A-4	0	0	98-100	97-100	78-100	34-95	16-47	2-24
	27-60	Loamy sand, sand, sandy loam, loam, sandy clay loam, clay loam	SM, SP-SM, SC-SM, SC, ML, CL-ML, CL	A-7-6, A-2-4, A-2-6, A-4, A-6	0	0	98-100	97-100	49-100	5-80	16-44	2-25
WfA:												
Wehadkee--------	0-6	Loam	CL-ML, CL, ML	A-4, A-6	0	0	98-100	97-100	82-95	58-75	22-47	3-18
	6-27	Clay loam, loam, sandy clay loam, silt loam, silty clay loam	CL, CL-ML, ML, SC, SC-SM, SM	A-7-6, A-6, A-4	0	0	98-100	97-100	78-100	34-95	16-47	2-24
	27-60	Loamy sand, sand, sandy loam, loam, sandy clay loam, clay loam	SM, SP-SM, SC-SM, SC, ML, CL-ML, CL	A-7-6, A-2-4, A-2-6, A-4, A-6	0	0	98-100	97-100	49-100	5-80	16-44	2-25
WhB:												
Whistlestop-----	0-7	Sandy loam	SM	A-2-4	0	0	96-100	92-100	55-70	28-40	17-35	1-6
	7-37	Clay, sandy clay	CL	A-7-6	0	0	98-100	95-100	81-100	43-95	42-66	13-22
	37-55	Sandy clay, sandy clay loam, clay	ML, SC-SM	A-7-5	0	0	98-100	95-100	86-100	33-80	29-49	6-14
	55-60	Sandy clay loam	SM, SC-SM	A-4	0	0	98-100	95-100	57-90	29-55	16-44	1-13

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WmE:												
Winnsboro-------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	16-32	2-13
	9-26	Clay, sandy clay	CL, CH	A-7-6, A-7	0-2	0-1	90-100	85-100	71-100	37-95	45-90	25-65
	26-42	Sandy clay loam	SC	A-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	42-50	Sandy clay loam	SC	A-6, A-2-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	50-56	Sandy clay loam, sandy loam	SC-SM, SM, SC	A-6, A-2-6, A-2-4	0-2	0-2	90-100	84-100	50-90	25-55	16-44	2-25
	56-60	Bedrock			---	---	---	---	---	---	---	---
Wynott----------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	16-32	2-13
	9-17	Clay	CH, CL	A-7, A-7-6	0	0-2	85-100	77-100	68-100	57-95	45-90	25-65
	17-23	Sandy clay	CL, SC, CH	A-7-6, A-7	0-2	0-2	85-100	77-100	65-95	35-60	29-75	14-40
	23-37	Sandy loam, sandy clay loam	SC-SM, SC	A-6, A-4, A-2-4	0-2	0-2	85-100	77-100	46-90	23-55	24-44	9-25
	37-47	Bedrock			---	---	---	---	---	---	---	---
WnD:												
Wynott----------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	16-32	2-13
	9-17	Clay	CH, CL	A-7, A-7-6	0	0-2	85-100	77-100	68-100	57-95	45-90	25-65
	17-23	Sandy clay	CL, SC, CH	A-7-6, A-7	0-2	0-2	85-100	77-100	65-95	35-60	29-75	15-40
	23-37	Sandy loam, sandy clay loam	SC-SM, SC	A-6, A-4, A-2-4	0-2	0-2	85-100	77-100	46-90	23-55	24-44	9-25
	37-47	Bedrock			---	---	---	---	---	---	---	---
Wilkes----------	0-3	Sandy loam	SC, SM, SC-SM	A-2-4, A-4	0-2	0-10	85-100	77-100	46-70	23-40	17-35	2-13
	3-6	Sandy loam	SC, SM, SC-SM	A-2-4, A-4	0-2	0-10	85-100	77-100	46-70	23-40	16-32	2-13
	6-18	Sandy clay loam, clay loam, clay	SC, CL, ML	A-7-5, A-7-6, A-7, A-6	0-1	0-10	85-100	77-100	62-100	27-95	31-75	13-40
	18-45	Bedrock			---	---	---	---	---	---	---	---
	>45	Bedrock			---	---	---	---	---	---	---	---
Winnsboro-------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	16-32	2-13
	9-26	Clay, sandy clay	CL, CH	A-7-6, A-7	0-2	0-1	90-100	85-100	71-100	37-95	45-90	25-65
	26-42	Sandy clay loam	SC	A-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	42-50	Sandy clay loam	SC	A-6, A-2-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	50-56	Sandy clay loam, sandy loam	SC-SM, SM, SC	A-6, A-2-6, A-2-4	0-2	0-2	90-100	84-100	50-90	25-55	16-44	2-25
	56-60	Bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WnE:												
Wynott----------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	16-32	2-13
	9-17	Clay	CH, CL	A-7, A-7-6	0	0-2	85-100	77-100	68-100	57-95	45-90	25-65
	17-23	Sandy clay	CL, SC, CH	A-7-6, A-7	0-2	0-2	85-100	77-100	65-95	35-60	29-75	14-40
	23-37	Sandy loam, sandy clay loam	SC-SM, SC	A-6, A-4, A-2-4	0-2	0-2	85-100	77-100	46-90	23-55	24-44	9-25
	37-47	Bedrock			---	---	---	---	---	---	---	---
Wilkes----------	0-3	Sandy loam	SC, SM, SC-SM	A-2-4, A-4	0-2	0-10	85-100	77-100	46-70	23-40	17-35	2-13
	3-6	Sandy loam	SC, SM, SC-SM	A-2-4, A-4	0-2	0-10	85-100	77-100	46-70	23-40	16-32	2-13
	6-18	Sandy clay loam, clay loam, clay	SC, CL, ML	A-7-6, A-7, A-6	0-1	0-10	85-100	77-100	62-100	27-95	31-75	13-40
	18-45	Bedrock			---	---	---	---	---	---	---	---
	45-49	Bedrock			---	---	---	---	---	---	---	---
Winnsboro-------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	16-32	2-13
	9-26	Clay, sandy clay	CL, CH	A-7-6, A-7	0-2	0-1	90-100	85-100	71-100	37-95	45-90	25-65
	26-42	Sandy clay loam	SC	A-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	42-50	Sandy clay loam	SC	A-6, A-2-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	50-56	Sandy clay loam, sandy loam	SC-SM, SM, SC	A-6, A-2-6, A-2-4	0-2	0-2	90-100	84-100	50-90	25-55	16-44	2-25
	56-60	Bedrock			---	---	---	---	---	---	---	---
WoD:												
Wynott----------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	16-32	2-13
	9-17	Clay	CH, CL	A-7, A-7-6	0	0-2	85-100	77-100	68-100	57-95	45-90	25-65
	17-23	Sandy clay	CL, SC, CH	A-7-6, A-7	0-2	0-2	85-100	77-100	65-95	35-60	29-75	15-40
	23-37	Sandy loam, sandy clay loam	SC-SM, SC	A-6, A-4, A-2-4	0-2	0-2	85-100	77-100	46-90	23-55	24-44	9-25
	37-47	Bedrock			---	---	---	---	---	---	---	---
Mecklenburg-----	0-8	Loam	CL, CL-ML, ML, SM	A-4, A-6	0	0-5	90-100	80-100	65-90	36-65	20-40	NP-15
	8-26	Clay	CH, MH	A-7	0	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	26-33	Loam, sandy clay loam, clay loam	CL	A-4, A-6, A-7	0	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	33-60	Loam, sandy clay loam, sandy loam, gravelly sandy loam	ML, SM	A-2, A-4, A-6, A-7	0-5	0-3	90-100	45-100	30-95	22-75	25-48	3-15

Table 14.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Winnsboro-------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	16-32	2-13
	9-26	Clay, sandy clay	CL, CH	A-7-6, A-7	0-2	0-1	90-100	85-100	71-100	37-95	45-90	25-65
	26-42	Sandy clay loam	SC	A-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	42-50	Sandy clay loam	SC	A-6, A-2-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	50-56	Sandy clay loam, sandy loam	SC-SM, SM, SC	A-6, A-2-6, A-2-4	0-2	0-2	90-100	84-100	50-90	25-55	16-44	2-25
	56-60	Bedrock			---	---	---	---	---	---	---	---
WsB:												
Wynott----------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	85-100	77-100	46-70	23-40	16-32	2-13
	9-17	Clay	CH, CL	A-7, A-7-6	0	0-2	85-100	77-100	68-100	57-95	45-90	25-65
	17-23	Sandy clay	CL, SC, CH	A-7-6, A-7	0-2	0-2	85-100	77-100	65-95	35-60	29-75	15-40
	23-37	Sandy loam, sandy clay loam	SC-SM, SC	A-6, A-4, A-2-4	0-2	0-2	85-100	77-100	46-90	23-55	24-44	9-25
	37-47	Bedrock			---	---	---	---	---	---	---	---
Winnsboro-------	0-5	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	17-35	2-13
	5-9	Sandy loam	SC-SM, SM	A-2-4	0-2	0-2	90-100	85-100	50-70	25-40	16-32	2-13
	9-26	Clay, sandy clay	CL, CH	A-7-6, A-7	0-2	0-1	90-100	85-100	71-100	37-95	45-90	25-65
	26-42	Sandy clay loam	SC	A-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	42-50	Sandy clay loam	SC	A-6, A-2-6	0-2	0-2	90-100	84-100	67-90	29-55	29-44	13-25
	50-56	Sandy clay loam, sandy loam	SC-SM, SM, SC	A-6, A-2-6, A-2-4	0-2	0-2	90-100	84-100	50-90	25-55	16-44	2-25
	56-60	Bedrock			---	---	---	---	---	---	---	---
Sedgefield------	0-6	Sandy loam	CL, ML, SC, SM	A-2, A-4, A-6	0	0-5	90-100	85-100	50-100	30-60	15-35	NP-12
	6-11	Sandy loam	CL, ML, SC, SM	A-2, A-4, A-6	0	0-5	90-100	85-100	50-100	30-60	15-35	NP-12
	11-16	Sandy clay, clay loam, clay	CH, CL	A-7	0	0-5	95-100	95-100	73-93	60-85	45-85	25-60
	16-32	Sandy clay, clay loam, clay	CH, CL	A-7	0	0-5	95-100	95-100	73-93	60-85	45-85	25-60
	32-42	Clay	CL, CH	A-7-6	0	0	95-100	95-100	73-93	60-85	45-85	25-60
	42-50	Clay	CL, CH	A-7-6	0	0	95-100	95-100	73-93	60-85	45-85	25-60
	50-60	Sandy clay, sandy loam, loam, gravelly sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	90-100	50-100	45-95	30-70	0-20	NP-5

Table 15.—Physical and Chemical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
AwE:											
Ashlar----------	0-7	5-15	1.30-1.55	2-6	0.08-0.12	0.0-2.9	4.5-5.5	0.5-1.0	.24	.24	2
	7-15	5-15	1.30-1.55	2-6	0.04-0.12	0.0-2.9	4.5-5.5	0.0-0.5	.24	.28	
	15-25	5-15	1.30-1.55	2-6	0.04-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.24	.28	
	25-29	---	---	---	---	---	---	---	---	---	
Wake----------	0-4	2-15	1.60-1.80	6-20	0.05-0.08	0.0-2.9	4.5-6.0	0.5-1.0	.15	.20	1
	4-14	2-15	1.60-1.80	6-20	0.05-0.08	0.0-2.9	4.5-6.0	0.0-0.2	.15	.20	
	14-18	---	---	---	---	---	---	---	---	---	
BcB:											
Buncombe----------	0-10	3-12	1.55-1.65	6-20	0.06-0.10	0.0-2.9	4.5-5.5	0.5-1.0	.10	.10	5
	10-60	3-12	1.55-1.70	6-20	0.03-0.07	0.0-2.9	4.5-5.5	0.0-0.2	.10	.10	
BpD:											
Bush River--------	0-5	5-20	1.58-1.62	2-6	0.12-0.14	0.0-2.9	4.5-6.0	0.5-2.0	.24	.24	4
	5-16	20-35	1.46-1.56	0.06-0.2	0.15-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	16-40	35-60	1.44-1.55	0.06-0.2	0.08-0.16	6.0-8.9	4.5-6.0	0.0-0.5	.28	.28	
	40-48	15-30	1.46-1.56	0.2-0.6	0.11-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	48-60	---	---	---	0.00-0.01	---	---	---	---	---	
Prosperity--------	0-3	5-20	1.58-1.62	2-6	0.12-0.14	0.0-2.9	4.5-6.0	0.5-2.0	.24	.24	4
	3-6	5-20	1.44-1.55	0.2-0.6	0.08-0.16	1.5-3.0	4.5-6.0	0.0-0.5	.28	.28	
	6-25	35-45	1.46-1.56	0.06-0.2	0.14-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	25-35	41-47	1.44-1.48	0.06-0.2	0.14-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	35-60	---	---	---	0.00-0.01	---	4.5-5.5	---	---	---	
CaB:											
Cataula----------	0-4	5-20	1.50-1.60	2-6	0.08-0.11	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	4-7	5-20	1.50-1.60	0.6-2	0.08-0.11	0.0-2.9	4.5-5.5	0.2-0.8	.28	.28	
	7-23	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.24	.24	
	23-30	35-60	1.35-1.45	0.2-0.6	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.24	.24	
	30-40	35-60	1.75-1.90	0.06-0.2	0.06-0.08	0.0-2.9	4.5-5.5	0.0-0.5	.24	.24	
	40-52	20-40	1.35-1.55	0.2-0.6	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.24	.24	
	52-60	5-35	1.35-1.60	0.2-0.6	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.32	.32	
CdB:											
Cecil----------	0-8	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	4
	8-11	20-40	1.40-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.2-0.8	.28	.28	
	11-37	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	37-48	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	48-60	5-35	1.45-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
CeC2:											
Cecil----------	0-8	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	4
	8-11	20-40	1.40-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.2-0.8	.28	.28	
	11-37	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	37-48	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	48-60	5-35	1.45-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
CfB2:											
Cecil----------	0-6	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	6-52	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	52-60	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	

Table 15.—Physical and Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
CgC3:											
Cecil----------	0-4	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	4-43	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	43-50	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	50-60	5-35	1.45-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
CuC:											
Cecil----------	0-8	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	4
	8-11	20-40	1.40-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.2-0.8	.28	.28	
	11-37	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	37-48	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	48-60	5-35	1.45-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
Urban land--------	---	---	---	---	---	---	---	---	---	---	--
CwA:											
Chewacla----------	0-6	7-27	1.45-1.55	0.6-2	0.15-0.22	0.0-2.9	4.5-6.5	1.0-4.0	.28	.28	5
	6-25	7-40	1.40-1.60	0.6-2	0.15-0.24	0.0-2.9	4.5-6.5	0.5-2.0	.32	.32	
	25-30	7-35	1.45-1.55	0.6-2	0.15-0.24	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	
	30-40	5-40	1.45-1.65	0.6-2	0.12-0.20	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	
	40-60	5-60	1.40-1.65	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
HaB:											
Hard Labor--------	0-9	5-35	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	4
	9-15	5-35	1.45-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.2-0.8	.28	.28	
	15-36	35-60	1.25-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	36-50	35-60	1.60-1.80	0.06-0.2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	50-60	20-55	1.35-1.55	0.2-0.6	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
HwB:											
Hiwassee----------	0-7	5-15	1.50-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.24	5
	7-37	30-40	1.40-1.50	0.6-2	0.12-0.15	0.0-2.9	4.5-6.5	0.0-0.2	.28	.28	
	37-60	20-36	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.0-0.2	.28	.28	
LcB:											
Lloyd----------	0-10	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	5
	10-55	27-60	1.35-1.50	0.6-2	0.12-0.15	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
	55-60	20-40	1.40-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
LdD2:											
Lloyd----------	0-4	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	5
	4-50	27-60	1.35-1.50	0.6-2	0.12-0.15	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
	50-60	20-40	1.40-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
LfB3:											
Lloyd----------	0-4	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	5
	4-35	27-60	1.30-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
	35-59	20-40	1.30-1.45	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
	59-60	7-35	1.45-1.65	0.6-2	0.11-0.15	0.0-2.9	4.5-6.5	0.0-0.2	.28	.28	
LfD3:											
Lloyd----------	0-4	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	5
	4-35	27-60	1.30-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
	35-60	20-40	1.30-1.45	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
LfE3:											
Lloyd----------	0-4	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	5
	4-35	27-60	1.30-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	
	35-60	20-40	1.30-1.45	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.0-0.5	.28	.28	

Table 15.—Physical and Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
MaB2:											
Madison----------	0-5	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	4
	5-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	24-38	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	38-50	5-35	1.45-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.32	.32	
	50-60	5-20	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	
MaD2:											
Madison----------	0-5	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	4
	5-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	24-38	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	38-50	5-35	1.45-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.32	.32	
	50-60	5-20	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	
MaE2:											
Madison----------	0-5	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	4
	5-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	24-38	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	38-50	5-35	1.45-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.32	.32	
	50-60	5-20	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	
MdB3:											
Madison----------	0-3	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	3-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	22-45	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	45-60	5-35	1.45-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	
MdD3:											
Madison----------	0-4	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	4-20	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	20-45	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	45-60	5-35	1.45-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	
MdE3:											
Madison----------	0-4	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	4-20	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	20-45	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	45-60	5-35	1.45-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	
MsD:											
Madison----------	0-5	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	4
	5-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	24-38	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	38-50	5-35	1.45-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.32	.32	
	50-60	5-20	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	
Bethlehem---------	0-8	5-20	1.50-1.60	2-6	0.06-0.11	0.0-2.9	4.5-5.5	0.5-2.0	.15	.28	3
	8-12	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.2-0.8	.24	.28	
	12-33	35-60	1.25-1.50	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.32	
	33-38	5-20	1.50-1.60	0.6-2	0.05-0.08	0.0-2.9	4.5-5.5	0.0-0.2	.20	.28	
	38-60	---	---	---	---	---	---	---	---	---	
MsE:											
Madison----------	0-5	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	4
	5-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	24-38	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.32	.32	
	38-50	5-35	1.45-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.32	.32	
	50-60	5-20	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.37	.37	

Table 15.—Physical and Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
Bethlehem---------	0-8	5-20	1.50-1.60	2-6	0.06-0.11	0.0-2.9	4.5-5.5	0.5-2.0	.15	.28	3
	8-12	20-35	1.45-1.55	0.6-2	0.06-0.12	0.0-2.9	4.5-5.5	0.2-0.8	.24	.28	
	12-33	35-60	1.25-1.50	0.6-2	0.05-0.08	0.0-2.9	4.5-5.5	0.0-0.5	.28	.32	
	33-38	5-20	1.50-1.60	0.6-2	0.05-0.08	0.0-2.9	4.5-5.5	0.0-0.2	.20	.28	
	38-60	---	---	---	---	---	---	---	---	---	
PaB:											
Pacolet----------	0-7	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	3
	7-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	25-33	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	33-54	5-40	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
	54-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
PaD2:											
Pacolet----------	0-7	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	3
	7-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	25-33	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	33-54	5-40	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
	54-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
PaE2:											
Pacolet----------	0-7	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	3
	7-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	25-33	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	33-54	5-40	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
	54-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
PcB3:											
Pacolet----------	0-6	20-31	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	2
	6-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	24-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
PcD3:											
Pacolet----------	0-6	20-31	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	2
	6-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	24-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
PcE3:											
Pacolet----------	0-6	20-31	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-6.5	0.5-2.0	.24	.24	2
	6-24	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	24-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
PdD:											
Pacolet----------	0-7	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	3
	7-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	25-33	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	33-54	5-40	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
	54-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
Saw----------	0-6	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	2
	6-11	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-5.5	0.2-0.8	.28	.28	
	11-28	35-60	1.25-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	28-32	5-35	1.45-1.60	0.6-6	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.20	.28	
	>32	---	---	---	---	---	---	---	---	---	
PdE:											
Pacolet----------	0-7	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	3
	7-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	25-33	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	33-54	5-40	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
	54-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	

Table 15.—Physical and Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
Saw----------	0-6	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	2
	6-11	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-5.5	0.2-0.8	.28	.28	
	11-28	35-60	1.25-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	28-32	5-35	1.45-1.60	0.6-6	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.20	.28	
	32-36	---	---	---	---	---	---	---	---	---	
PfE:											
Pacolet----------	0-7	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	3
	7-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	25-33	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	33-54	5-40	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
	54-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
Towaliga----------	0-3	7-27	1.45-1.55	2-6	0.01-0.03	0.0-2.9	4.5-5.5	0.5-2.0	.05	.28	5
	3-11	7-27	1.45-1.55	2-6	0.02-0.06	0.0-2.9	4.5-5.5	0.2-0.8	.10	.32	
	11-33	5-35	1.45-1.60	2-6	0.02-0.06	0.0-2.9	4.5-5.5	0.0-0.5	.05	.24	
	33-47	27-60	1.35-1.50	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.20	.20	
	47-64	20-40	1.40-1.55	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.5	.24	.24	
PnE:											
Pacolet----------	0-7	5-20	1.50-1.60	2-6	0.08-0.12	0.0-2.9	4.5-6.5	0.5-2.0	.20	.20	3
	7-25	35-60	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	25-33	20-35	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.28	.28	
	33-54	5-40	1.40-1.60	0.6-2	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
	54-60	5-35	1.50-1.60	0.6-2	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.28	.28	
Urban land--------	---	---	---	---	---	---	---	---	---	---	--
PrE:											
Prosperity--------	0-3	5-20	1.58-1.62	2-6	0.12-0.14	0.0-2.9	4.5-6.0	0.5-2.0	.24	.24	4
	3-6	10-30	1.44-1.55	0.06-0.2	0.08-0.16	6.0-8.9	4.5-6.0	0.0-0.5	.28	.28	
	6-25	30-45	1.46-1.56	0.2-0.6	0.14-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	25-35	41-47	1.44-1.48	0.06-0.2	0.14-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	35-60	---	---	---	0.00-0.01	---	---	---	---	---	
Bush River--------	0-5	5-20	1.58-1.62	2-6	0.12-0.14	0.0-2.9	4.5-6.0	0.5-2.0	.24	.24	4
	5-16	20-35	1.46-1.56	0.2-0.6	0.15-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	16-40	35-60	1.44-1.55	0.06-0.2	0.08-0.16	6.0-8.9	4.5-6.0	0.0-0.5	.28	.28	
	40-48	15-35	1.46-1.56	0.2-0.6	0.11-0.17	3.0-5.9	4.5-6.0	0.0-0.5	.28	.28	
	48-60	---	---	---	0.00-0.01	---	---	---	---	---	
RvA:											
Riverview---------	0-4	10-27	---	2-6	0.18-0.19	0.0-2.9	5.0-6.8	0.5-2.0	.17	.17	5
	4-16	18-35	---	0.6-2	0.08-0.15	0.0-2.9	5.5-6.0	0.5-2.0	.24	.24	
	16-32	13-35	1.20-1.50	0.6-2	0.08-0.15	0.0-2.9	4.5-6.0	0.5-2.0	.24	.24	
	32-45	18-35	1.30-1.60	0.6-2	0.16-0.24	0.0-2.9	4.5-6.5	0.5-2.0	.32	.32	
	45-80	18-35	1.20-1.40	0.6-2	0.15-0.22	0.0-2.9	4.5-6.0	0.5-2.0	.24	.24	
SeB:											
Sedgefield--------	0-6	8-20	1.40-1.60	2-6	0.10-0.15	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	6-11	8-20	1.40-1.60	2-6	0.10-0.15	0.0-2.9	4.5-6.5	0.2-2.0	.28	.28	
	11-16	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	5.6-8.4	0.0-0.5	.28	.28	
	16-32	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	5.6-8.4	0.0-0.5	.28	.28	
	32-40	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	5.6-8.4	0.0-0.5	.28	.28	
	40-50	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	5.6-8.4	0.0-0.5	.28	.28	
	50-60	10-60	1.30-1.55	0.6-6	0.08-0.15	0.0-2.9	5.1-7.3	0.0-0.5	.24	.28	
ToA:											
Toccoa----------	0-4	5-20	1.50-1.60	2-6	0.10-0.14	0.0-2.9	5.1-6.5	1.0-3.0	.10	.10	4
	4-60	5-27	1.45-1.65	2-6	0.09-0.12	0.0-2.9	5.1-6.5	1.0-2.0	.20	.20	

Table 15.—Physical and Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
Ud:											
Udorthents--------	0-60	10-50	1.30-1.65	0.00-2	0.10-0.17	3.0-5.9	4.5-7.8	0.0-1.0	.28	.28	5
Ur:											
Urban land--------	---	---	---	---	---	---	---	---	---	---	--
WaD:											
Wake----------	0-4	2-15	1.60-1.80	6-20	0.05-0.08	0.0-2.9	4.5-6.0	0.5-1.0	.15	.20	1
	4-14	2-15	1.60-1.80	6-20	0.05-0.08	0.0-2.9	4.5-6.0	0.0-0.2	.15	.20	
	14-18	---	---	---	---	---	---	---	---	---	
Ashlar----------	0-7	5-15	1.30-1.55	2-6	0.08-0.12	0.0-2.9	4.5-5.5	0.5-1.0	.24	.24	2
	7-15	5-15	1.30-1.55	2-6	0.04-0.12	0.0-2.9	4.5-5.5	0.0-0.5	.24	.28	
	15-25	5-15	1.30-1.55	2-6	0.04-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.24	.28	
	25-29	---	---	---	---	---	---	---	---	---	
Rock outcrop------	0-60	---	---	---	---	---	---	---	---	---	--
WeA:											
Wehadkee----------	0-6	7-27	1.45-1.55	2-6	0.18-0.19	0.0-2.9	4.5-6.5	2.0-5.0	.24	.24	5
	6-27	5-35	1.40-1.55	0.6-2	0.12-0.18	0.0-2.9	4.5-7.3	0.0-2.0	.32	.32	
	27-60	5-35	1.40-1.70	6-20	0.05-0.18	0.0-2.9	4.5-7.3	0.0-0.5	.32	.32	
WfA:											
Wehadkee----------	0-6	7-27	1.45-1.55	2-6	0.18-0.19	0.0-2.9	4.5-6.5	2.0-5.0	.24	.24	5
	6-27	5-35	1.40-1.55	0.6-2	0.12-0.18	0.0-2.9	4.5-7.3	0.0-2.0	.32	.32	
	27-60	5-35	1.40-1.70	6-20	0.05-0.18	0.0-2.9	4.5-7.3	0.0-0.5	.32	.32	
WhB:											
Whistlestop-------	0-7	15-22	1.50-1.60	2-6	0.08-0.11	0.0-2.9	4.5-5.5	0.5-2.0	.28	.28	5
	7-37	45-64	1.35-1.45	0.6-2	0.12-0.15	0.0-2.9	4.5-5.5	0.0-0.5	.24	.24	
	37-55	30-51	1.35-1.55	0.2-0.6	0.10-0.14	0.0-2.9	4.5-5.5	0.0-0.5	.24	.24	
	55-60	25-30	1.35-1.60	0.2-0.6	0.08-0.12	0.0-2.9	4.5-5.5	0.0-0.2	.32	.32	
WmE:											
Winnsboro---------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.5-2.0	.28	.28	4
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.2-0.8	.28	.28	
	9-26	35-60	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	6.1-7.8	0.0-0.5	.20	.20	
	26-42	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.5	.28	.28	
	42-50	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	50-56	5-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	56-60	---	---	---	---	---	---	---	---	---	
Wynott----------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.2-0.8	.28	.28	
	9-17	35-65	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	5.6-6.5	0.0-0.5	.28	.28	
	17-23	20-50	1.35-1.45	0.2-0.6	0.10-0.15	0.0-2.9	5.6-6.5	0.0-0.5	.28	.28	
	23-37	15-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	5.6-6.5	0.0-0.2	.28	.28	
	37-47	---	---	---	---	---	---	---	---	---	
WnD:											
Wynott----------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.2-0.8	.28	.28	
	9-17	35-65	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	5.6-6.5	0.0-0.5	.28	.28	
	17-23	20-50	1.35-1.45	0.2-0.6	0.10-0.15	0.0-2.9	5.6-6.5	0.0-0.5	.28	.28	
	23-37	15-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	5.6-6.5	0.0-0.2	.28	.28	
	37-47	---	---	---	---	---	---	---	---	---	

Table 15.—Physical and Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
Wilkes----------	0-3	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.5-2.0	.24	.24	2
	3-6	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.2-0.8	.24	.24	
	6-18	20-45	1.35-1.55	0.2-0.6	0.13-0.20	3.0-5.9	6.1-7.8	0.0-0.5	.32	.32	
	18-45	---	---	---	---	---	---	---	---	---	
	>45	---	---	---	---	---	---	---	---	---	
Winnsboro---------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.5-2.0	.28	.28	4
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.2-0.8	.28	.28	
	9-26	35-60	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	6.1-7.8	0.0-0.5	.20	.20	
	26-42	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.5	.28	.28	
	42-50	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	50-56	5-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	56-60	---	---	---	---	---	---	---	---	---	
WnE:											
Wynott----------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.2-0.8	.28	.28	
	9-17	35-65	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	5.6-6.5	0.0-0.5	.28	.28	
	17-23	20-50	1.35-1.45	0.2-0.6	0.10-0.15	0.0-2.9	5.6-6.5	0.0-0.5	.28	.28	
	23-37	15-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	5.6-6.5	0.0-0.2	.28	.28	
	37-47	---	---	---	---	---	---	---	---	---	
Wilkes----------	0-3	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.5-2.0	.24	.24	2
	3-6	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.2-0.8	.24	.24	
	6-18	20-45	1.35-1.55	0.2-0.6	0.13-0.20	3.0-5.9	6.1-7.8	0.0-0.5	.32	.32	
	18-45	---	---	---	---	---	---	---	---	---	
	45-49	---	---	---	---	---	---	---	---	---	
Winnsboro---------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.5-2.0	.28	.28	4
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.2-0.8	.28	.28	
	9-26	35-60	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	6.1-7.8	0.0-0.5	.20	.20	
	26-42	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.5	.28	.28	
	42-50	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	50-56	5-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	56-60	---	---	---	---	---	---	---	---	---	
WoD:											
Wynott----------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.2-0.8	.28	.28	
	9-17	35-65	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	5.6-6.5	0.0-0.5	.28	.28	
	17-23	20-50	1.35-1.45	0.2-0.6	0.10-0.15	0.0-2.9	5.6-6.5	0.0-0.5	.28	.28	
	23-37	15-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	5.6-6.5	0.0-0.2	.28	.28	
	37-47	---	---	---	---	---	---	---	---	---	
Mecklenburg-------	0-8	8-25	1.30-1.50	0.6-2	0.14-0.19	0.0-2.9	5.6-7.3	0.5-2.0	.24	.24	4
	8-26	40-60	1.40-1.60	0.06-0.2	0.12-0.14	3.0-5.9	5.6-7.3	0.0-0.5	.28	.28	
	26-33	20-35	1.40-1.60	0.6-2	0.12-0.14	0.0-2.9	5.6-7.3	0.0-0.5	.32	.32	
	33-60	15-35	1.30-1.60	0.2-2	0.15-0.20	0.0-2.9	5.6-7.3	0.0-0.5	.28	.28	
Winnsboro---------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.5-2.0	.28	.28	4
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.2-0.8	.28	.28	
	9-26	35-60	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	6.1-7.8	0.0-0.5	.20	.20	
	26-42	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.5	.28	.28	
	42-50	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	50-56	5-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	56-60	---	---	---	---	---	---	---	---	---	

Table 15.—Physical and Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Soil reaction	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	pH	Pct			
WsB:											
Wynott----------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	4.5-6.5	0.2-0.8	.28	.28	
	9-17	35-65	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	5.6-6.5	0.0-0.5	.28	.28	
	17-23	20-50	1.35-1.45	0.2-0.6	0.10-0.15	0.0-2.9	5.6-6.5	0.0-0.5	.28	.28	
	23-37	15-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	5.6-6.5	0.0-0.2	.28	.28	
	37-47	---	---	---	---	---	---	---	---	---	
Winnsboro---------	0-5	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.5-2.0	.28	.28	4
	5-9	5-20	1.50-1.60	2-6	0.11-0.15	0.0-2.9	5.1-6.5	0.2-0.8	.28	.28	
	9-26	35-60	1.25-1.45	0.06-0.2	0.13-0.20	6.0-8.9	6.1-7.8	0.0-0.5	.20	.20	
	26-42	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.5	.28	.28	
	42-50	20-35	1.45-1.55	0.2-0.6	0.10-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	50-56	5-35	1.45-1.60	0.2-0.6	0.11-0.15	0.0-2.9	6.1-7.8	0.0-0.2	.28	.28	
	56-60	---	---	---	---	---	---	---	---	---	
Sedgefield--------	0-6	8-20	1.40-1.60	2-6	0.10-0.15	0.0-2.9	4.5-6.5	0.5-2.0	.28	.28	3
	6-11	8-20	1.40-1.60	2-6	0.10-0.15	0.0-2.9	4.5-6.5	0.2-2.0	.28	.28	
	11-16	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	5.6-8.4	0.0-0.5	.28	.28	
	16-32	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	5.6-8.4	0.0-0.5	.28	.28	
	32-40	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	6.5-8.0	0.0-0.5	.28	.28	
	40-50	35-60	1.25-1.40	0.06-0.2	0.14-0.18	6.0-8.9	6.5-8.0	0.0-0.5	.28	.28	
	50-60	10-60	1.30-1.55	0.6-6	0.08-0.15	0.0-2.9	5.1-7.3	0.0-0.5	.24	.28	

Table 16.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer			Risk of corrosion	
	Kind	Depth to top	Hardness	Uncoated steel	Concrete
		In	In		In
AwE:					
Ashlar	Lithic bedrock	23-40	Indurated	Moderate	Moderate
Wake	Lithic bedrock	11-20	Indurated	Moderate	Moderate
BcB:					
Buncombe	---	---	---	Low	Moderate
BpD:					
Bush River	Paralithic bedrock	40-60	Moderately cemented	High	High
Prosperity	Paralithic bedrock	20-40	Moderately cemented	High	High
CaB:					
Cataula	---	---	---	High	Moderate
CdB:					
Cecil	---	---	---	High	High
CeC2:					
Cecil	---	---	---	High	High
CfB2:					
Cecil	---	---	---	High	High
CgC3:					
Cecil	---	---	---	High	High
CuC:					
Cecil	---	---	---	High	High
Urban land	---	---	---	---	---
CwA:					
Chewacla	---	---	---	High	Moderate
HaB:					
Hard Labor	---	---	---	High	Moderate
HwB:					
Hiwassee	---	---	---	Moderate	Moderate
LcB:					
Lloyd	---	---	---	Moderate	Moderate
LdD2:					
Lloyd	---	---	---	Moderate	Moderate
LfB3:					
Lloyd	---	---	---	Moderate	Moderate
LfD3:					
Lloyd	---	---	---	Moderate	Moderate
LfE3:					
Lloyd	---	---	---	Moderate	Moderate

Table 16.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion	
	Kind	Depth to top	Hardness	Uncoated steel	Concrete
		In	In		In
MaB2:					
Madison	---	---	---	High	Moderate
MaD2:					
Madison	---	---	---	High	Moderate
MaE2:					
Madison	---	---	---	High	Moderate
MdB3:					
Madison	---	---	---	High	Moderate
MdD3:					
Madison	---	---	---	High	Moderate
MdE3:					
Madison	---	---	---	High	Moderate
MsD:					
Madison	---	---	---	High	Moderate
Bethlehem	Paralithic bedrock	20-40	Moderately cemented	High	Moderate
MsE:					
Madison	---	---	---	High	Moderate
Bethlehem	Paralithic bedrock	20-40	Moderately cemented	High	Moderate
PaB:					
Pacolet	---	---	---	High	High
PaD2:					
Pacolet	---	---	---	High	High
PaE2:					
Pacolet	---	---	---	High	High
PcB3:					
Pacolet	---	---	---	High	High
PcD3:					
Pacolet	---	---	---	High	High
PcE3:					
Pacolet	---	---	---	High	High
PdD:					
Pacolet	---	---	---	High	High
Saw	Lithic bedrock	22-40	Indurated	High	High
PdE:					
Pacolet	---	---	---	High	High
Saw	Lithic bedrock	22-40	Indurated	High	High

Table 16.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion	
	Kind	Depth to top	Hardness	Uncoated steel	Concrete
		In	In		In
PfE:					
Pacolet	---	---	---	High	High
Towaliga	---	---	---	High	Moderate
PnE:					
Pacolet	---	---	---	High	High
Urban land	---	---	---	---	---
PrE:					
Prosperity	Paralithic bedrock	20-40	Moderately cemented	High	High
Bush River	Paralithic bedrock	40-60	Moderately cemented	High	High
RvA:					
Riverview	---	---	---	Low	Moderate
SeB:					
Sedgefield	---	---	---	High	Moderate
ToA:					
Toccoa	---	---	---	Moderate	Moderate
Ud:					
Udorthents	---	---	---	High	High
Ur:					
Urban land	---	---	---	---	---
WaD:					
Wake	Lithic bedrock	11-20	Indurated	Moderate	Moderate
Ashlar	Lithic bedrock	23-40	Indurated	Moderate	Moderate
Rock outcrop	Lithic bedrock	0-0	Indurated	---	---
WeA:					
Wehadkee	---	---	---	High	Moderate
WfA:					
Wehadkee	---	---	---	High	Moderate
WhB:					
Whistlestop	---	---	---	---	---
WmE:					
Winnsboro	Paralithic bedrock	39-60	Weakly cemented	Moderate	High
Wynott	Paralithic bedrock	20-39	Weakly cemented	Moderate	High
WnD:					
Wynott	Paralithic bedrock	20-39	Weakly cemented	Moderate	High
Wilkes	Paralithic bedrock	10-20	Weakly cemented	Moderate	Moderate
	Lithic bedrock	39-60	Strongly cemented		
Winnsboro	Paralithic bedrock	39-60	Weakly cemented	Moderate	High

Table 16.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion	
	Kind	Depth to top	Hardness	Uncoated steel	Concrete
		In	In		In
WnE:					
Wynott	Paralithic bedrock	20-39	Weakly cemented	Moderate	High
Wilkes	Paralithic bedrock	10-20	Weakly cemented	Moderate	Moderate
	Lithic bedrock	39-60	Strongly cemented		
Winnsboro	Paralithic bedrock	39-60	Weakly cemented	Moderate	High
WoD:					
Wynott	Paralithic bedrock	20-39	Weakly cemented	Moderate	High
Mecklenburg	---	---	---	High	Moderate
Winnsboro	Paralithic bedrock	39-60	Weakly cemented	Moderate	High
WsB:					
Wynott	Paralithic bedrock	20-39	Weakly cemented	Moderate	High
Winnsboro	Paralithic bedrock	39-60	Weakly cemented	Moderate	High
Sedgefield	---	---	---	High	Moderate

Table 17.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Months	Water table: Upper limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft		Ft				
AwE:									
Ashlar----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Wake----------	D	Jan-Dec	>6.0	---	---	---	None	---	None
BcB:									
Buncombe--------	A	Jan-Apr	---	---	---	---	None	Very brief	Occasional
		May-Dec	---	---	---	---	None	---	---
BpD:									
Bush River------	C	Jan-Mar	1.5-2.5	Perched	---	---	None	---	None
		Apr-Nov	>5.0	---	---	---	None	---	None
		Dec	1.5-2.5	Perched	---	---	None	---	None
Prosperity------	C	Jan-Mar	1.5-2.5	Perched	---	---	None	---	None
		Apr-Nov	>5.0	---	---	---	None	---	None
		Dec	1.5-2.5	Perched	---	---	None	---	None
CaB:									
Cataula---------	B	Jan-Apr	2.5-3.3	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	None	---	None
		Dec	2.5-3.3	Perched	---	---	None	---	None
CdB:									
Cecil----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
CeC2:									
Cecil----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
CfB2:									
Cecil----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
CgC3:									
Cecil----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
CuC:									
Cecil----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Urban land------	---	Jan-Dec	>6.0	---	---	---	None	---	None
CwA:									
Chewacla--------	C	Jan-Apr	0.5-2.0	Apparent	---	---	None	Brief	Frequent
		May-Nov	---	---	---	---	None	---	---
		Dec	0.5-2.0	Apparent	---	---	None	Brief	Frequent
HaB:									
Hard Labor------	B	Jan-Apr	2.5-3.3	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	None	---	None
		Dec	2.5-3.3	Perched	---	---	None	---	None
HwB:									
Hiwassee--------	B	Jan-Dec	>6.0	---	---	---	None	---	None
LcB:									
Lloyd----------	B	Jan-Dec	>6.0	---	---	---	None	---	None

Table 17.—Water Features—Continued

Map symbol and soil name	Hydrologic group	Months	Water table: Upper limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft		Ft				
LdD2:									
Lloyd----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
LfB3:									
Lloyd----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
LfD3:									
Lloyd----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
LfE3:									
Lloyd----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MaB2:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MaD2:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MaE2:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MdB3:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MdD3:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MdE3:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MsD:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Bethlehem-------	B	Jan-Dec	>6.0	---	---	---	None	---	None
MsE:									
Madison---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Bethlehem-------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PaB:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PaD2:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PaE2:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PcB3:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PcD3:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PcE3:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None

Table 17.—Water Features—Continued

Map symbol and soil name	Hydrologic group	Months	Water table: Upper limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft		Ft				
PdD:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Saw----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PdE:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Saw----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PfE:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Towaliga--------	B	Jan-Dec	>6.0	---	---	---	None	---	None
PnE:									
Pacolet---------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Urban land------	---	Jan-Dec	>6.0	---	---	---	None	---	None
Pq:									
Pits----------	---	Jan-Dec	>6.0	---	---	---	None	---	None
PrE:									
Prosperity------	C	Jan-Mar	1.5-2.5	Perched	---	---	None	---	None
		Apr-Nov	>5.0	---	---	---	None	---	None
		Dec	1.5-2.5	Perched	---	---	None	---	None
Bush River------	C	Jan-Mar	1.5-2.5	Perched	---	---	None	---	None
		Apr-Nov	>5.0	---	---	---	None	---	None
		Dec	1.5-2.5	Perched	---	---	None	---	None
RvA:									
Riverview-------	B	Jan-Mar	3.0-5.0	Apparent	---	---	None	Brief	Occasional
		Apr-Nov	>6.0	---	---	---	None	---	---
		Dec	3.0-5.0	Apparent	---	---	None	Brief	Occasional
SeB:									
Sedgefield------	C	Jan-Mar	1.0-1.5	Perched	---	---	None	---	None
		Apr-Dec	>6.0	---	---	---	None	---	None
ToA:									
Toccoa----------	B	Jan-Apr	3.3-5.0	Apparent	---	---	None	Brief	Frequent
		May-Nov	---	---	---	---	None	---	---
		Dec	3.3-5.0	Apparent	---	---	None	Brief	Frequent
Ud:									
Udorthents------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Ur:									
Urban land------	---	Jan-Dec	>6.0	---	---	---	None	---	None
WaD:									
Wake----------	D	Jan-Dec	>6.0	---	---	---	None	---	None
Ashlar----------	B	Jan-Dec	>6.0	---	---	---	None	---	None
Rock outcrop----	---	Jan-Dec	>6.0	---	---	---	None	---	None

Table 17.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft		Ft				
WeA:									
Wehadkee--------	D	Jan-Apr	0.0-1.0	Apparent	---	---	None	Long	Frequent
		May	0.0-1.0	Apparent	---	---	None	---	---
		Jun-Nov	---	---	---	---	None	---	---
		Dec	0.0-1.0	Apparent	---	---	None	Long	Frequent
WfA:									
Wehadkee--------	D	Jan-Apr	0.0-1.0	Apparent	0.0-2.0	Very long	Frequent	Long	Frequent
		May-Nov	0.0-1.0	Apparent	0.0-2.0	Very long	Frequent	---	---
		Dec	0.0-1.0	Apparent	0.0-2.0	Very long	Frequent	Long	Frequent
WhB:									
Whistlestop-----	C	Jan-Mar	2.5-3.3	Apparent	---	---	None	Very brief	Rare
		Apr-Dec	---	---	---	---	None	---	None
WmE:									
Winnsboro-------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Wynott----------	C	Jan-Dec	>6.0	---	---	---	None	---	None
WnD:									
Wynott----------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Wilkes----------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Winnsboro-------	C	Jan-Dec	>6.0	---	---	---	None	---	None
WnE:									
Wynott----------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Wilkes----------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Winnsboro-------	C	Jan-Dec	>6.0	---	---	---	None	---	None
WoD:									
Wynott----------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Mecklenburg-----	C	Jan-Dec	>6.0	---	---	---	None	---	None
Winnsboro-------	C	Jan-Dec	>6.0	---	---	---	None	---	None
WsB:									
Wynott----------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Winnsboro-------	C	Jan-Dec	>6.0	---	---	---	None	---	None
Sedgefield------	C	Jan-Mar	1.0-1.5	Perched	---	---	None	---	None
		Apr-Dec	>6.0	---	---	---	None	---	None

Table 18.—Taxonomic Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Ashlar	Coarse-loamy, mixed, semiactive, thermic Typic Dystrudepts
Bethlehem	Fine, kaolinitic, thermic Typic Kanhapludults
Buncombe	Mixed, thermic Typic Udipsamments
Bush River	Fine, mixed, semiactive, thermic Aquic Hapludults
Cataula	Fine, kaolinitic, thermic Oxyaquic Kanhapludults
Cecil	Fine, kaolinitic, thermic Typic Kanhapludults
Chewacla	Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts
Hard Labor	Fine, kaolinitic, thermic Oxyaquic Kanhapludults
Hiwassee	Fine, kaolinitic, thermic Rhodic Kanhapludults
Lloyd	Fine, kaolinitic, thermic Rhodic Kanhapludults
Madison	Fine, kaolinitic, thermic Typic Kanhapludults
Mecklenburg	Fine, mixed, active, thermic Ultic Hapludalfs
Pacolet	Fine, kaolinitic, thermic Typic Kanhapludults
Prosperity	Fine, mixed, semiactive, thermic Aquic Hapludults
Riverview	Fine-loamy, mixed, active, thermic Oxyaquic Dystrudepts
Saw	Fine, kaolinitic, thermic Typic Kanhapludults
Sedgefield	Fine, mixed, active, thermic Aquultic Hapludalfs
Toccoa	Coarse-loamy, mixed, active, nonacid, thermic Typic Udifluvents
Towaliga	Fine, kaolinitic, thermic Typic Hapludults
Udorthents	Udorthents
Wake	Mixed, thermic Lithic Udipsamments
Wehadkee	Fine-loamy, mixed, active, nonacid, thermic Fluvaquentic Endoaquepts
Whistlestop	Fine, mixed, thermic Oxyaquic Hapludults
Wilkes	Loamy, mixed, active, thermic, shallow Typic Hapludalfs
Winnsboro	Fine, mixed, active, thermic Typic Hapludalfs
Wynott	Fine, mixed, active, thermic Typic Hapludalfs

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