United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with the Tennessee Agricultural Experiment Station

Soil Survey of Trousdale County, Tennessee

How to Use This Soil Survey

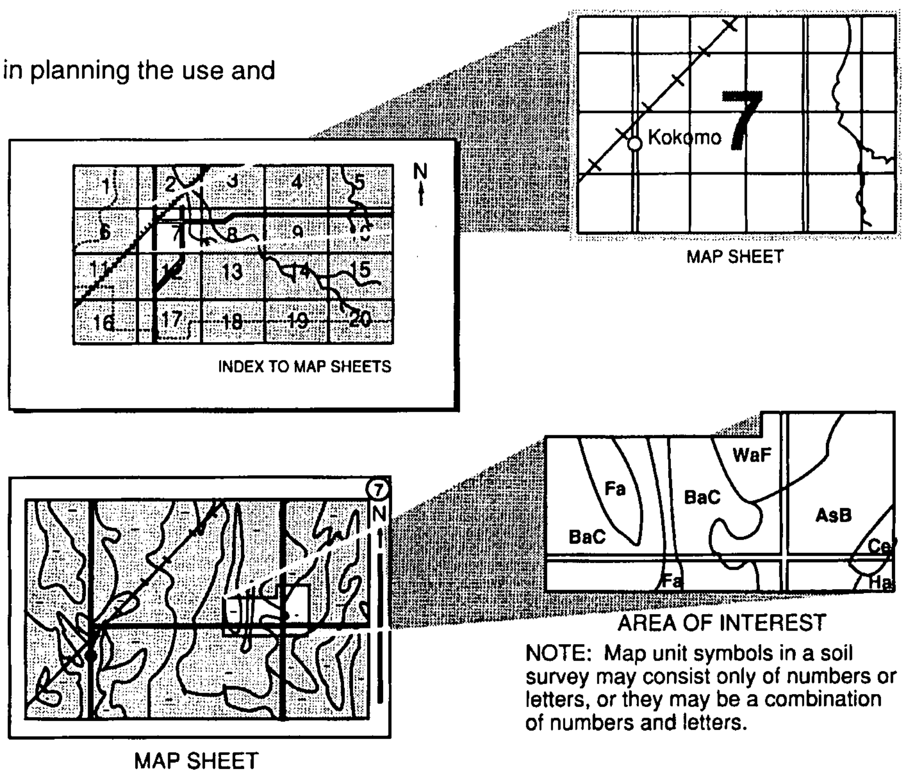
General Soil Map

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.

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

Major fieldwork for this soil survey was completed in 1986. Soil names and descriptions were approved in 1986. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1986. This survey was made cooperatively by the Natural Resources Conservation Service and the Tennessee Agricultural Experiment Station, the Trousdale County Board of Commissioners, and the Tennessee Department of Agriculture. The survey is part of the technical assistance furnished to the Trousdale County Soil Conservation District.

Cover: Typical scene in Trousdale County, Tennessee. Tobacco and pasture are on Dellrose soils around the barn. Sulphura soils are in the areas in the background.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov (click on "Technical Resources").

Contents

Issued 2001

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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 that affect 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 shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

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

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Soil Survey of Trousdale County, Tennessee

By Jerry L. Prater and John G. Gibi, Natural Resources Conservation Service, and Phillip D. Dickerson, Trousdale County

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Tennessee Agricultural Experiment Station, the Trousdale County Board of Commissioners, and the Tennessee Department of Agriculture

TROUSDALE COUNTY is in the north-central part of Tennessee (fig. 1). Hartsville, the county seat, is in the central part of the county. Trousdale County is in two major physiographic regions. About 97 percent of the county is in the Central Basin. The remaining 3 percent is in the Highland Rim region. Trousdale County has a total area of 74,500 acres.

The Nashville Basin is undulating to hilly. Most of the soils in the Nashville Basin formed in clayey residuum from limestone, alluvium, or alluvium and the underlying clayey residuum. Most of the soils on rolling to hilly uplands have a clayey subsoil and are 8 to more than 60 inches deep over limestone bedrock. Some of the soils have outcrops of limestone rock. Most of the soils on the broad, undulating uplands, terraces, and nearly level bottoms are deep and loamy.

The Highland Rim, which is in the northeastern and northwestern parts of the county, consists of hilly to steep uplands. Most of the soils on the Highland Rim formed in residuum from weathered, interbedded limestone, siltstone, and shale.

Most of the undulating and gently sloping soils in the county are well suited to cropland if management practices are used to help control erosion. Soybeans and corn are the major row crops by acreage, and tobacco is the major cash crop. Tobacco markets are located in Hartsville and in adjoining counties. Many areas throughout Trousdale County are used as pasture. Most of the pastureland is used for the production of beef cattle. Most of the hilly and steep areas are used as woodland. A few small sawmills are in the county.

Several soils in the county are well suited to most urban uses, but many of the soils are poorly suited to most urban uses because of slow permeability, slope, flooding, depth to rock, or wetness.

Figure 1.—Location of Trousdale County in Tennessee.

General Nature of the County

This section gives general information about the county. It describes climate, history and development, and physiography and drainage.

Climate

In Trousdale County, summers are hot in the valleys and slightly cooler in the hills. Winters are moderately cold. Rains are fairly heavy and well distributed throughout the year. Snow falls nearly every winter. The snow cover usually lasts only a few days.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Portland, Tennessee, in the period 1955 to 1984. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 36 degrees F and the average daily minimum temperature is 27 degrees. The lowest temperature on record, which occurred on January 30, 1966, is -21 degrees. In summer, the average temperature is 75 degrees and the average daily maximum temperature is 86 degrees. The highest recorded temperature, which occurred on July 17, 1980, is 101 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 51 inches. Of this, 26 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 22 inches. The heaviest 1-day rainfall during the period of record was 8.05 inches on June 23, 1969. Thunderstorms occur on about 54 days each year.

The average seasonal snowfall is about 10 inches. The greatest snow depth at any one time during the period of record was 12 inches. On the average, 5 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in spring.

History and Development

The first people in the area that is now Trousdale County were probably Paleo Stone Age Indians, followed by the Archaic Period Indians, and then by Mound Builders until about 1600 A.D. The area was used as hunting grounds by the Cherokee, Chickasaw, Creek, and Shawnee Indians.

The first Europeans in Trousdale County were probably French traders and hunters in the early 1700's. Later, frontiersmen from the colonies hunted and explored the area. Settlers began moving into Trousdale County from Virginia and the Carolinas in the 1790's. The fertile soils, abundant game, and accessibility to the Cumberland River resulted in quick settlement. In 1880, the population was 6,646.

The formation of Trousdale County, one of a few counties that were established at the same time as the Tennessee State constitution, was approved by an act of the General Assembly of Tennessee on June 21, 1870. Organization of the county was approved by vote of the population on July 9, 1880. The county was formed from parts of Macon, Smith, Sumner, and Wilson Counties. Trousdale County was named in honor of General William Trousdale, 13th Governor of Tennessee. Hartsville was established in the early 1800's on land belonging to the Hart family. It was selected as the county seat in November 1870.

At first, farms were large and cotton was the dominate crop. Later, corn and wheat became the dominate crops and farms became smaller. In the middle 1800's, dark tobacco was the major cash crop. In the 1920's, burley tobacco replaced dark tobacco. It remains the major cash crop. The Cumberland River provided the major medium for transportation of products during most of the 1800's. In 1892, a railroad was built to Hartsville and began providing transportation to more markets. In the early to middle 1900's, dairy cattle and beef cattle operations became important parts of the farming economy and industry began moving into the region *(1, 4)*.

In 1982, the population of Trousdale County was 5,941. Hartsville had a population of 2,651 in 1980.

Physiography and Drainage

Trousdale County ranges from nearly level to steep. The landscape changes as the geologic formations change because of the rate at which the various formations are affected by the processes of erosion over long periods of time.

Elevation ranges from about 445 feet above mean sea level at Old Hickory Lake to about 1,100 feet above mean sea level in the northwestern part of the county.

The Cumberland River divides the southeastern part of the county and forms the county boundary in the southwest. The Highland Rim escarpment extends into the northwestern parts of Trousdale County. Knobs and ridges extend throughout most areas of the county in the Nashville Basin.

Dendritic drainage systems flow southward throughout most of the county into Old Hickory Lake. The drainage flows northward in the southeastern part of the county south of Old Hickory Lake. Rocky Creek, Little Goose Creek, Goose Creek, and Dixon Creek are the main streams draining into Old Hickory Lake.

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.

The soils and miscellaneous areas in the survey area are 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 and 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 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.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. In the legend for the detailed soil maps, narrowly defined units are indicated by symbols in which the first letter is a capital and the second is lowercase. For broadly defined units, the first and second letters are capitals.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils 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.

Soil Descriptions

1. Mimosa-Barfield-Rock Outcrop

Rock outcrop and deep and shallow, well drained soils that have a clayey subsoil; on rolling to steep uplands

This map unit is mostly in the northern and central parts of the county. It is in the Nashville Basin. Slopes are mainly 5 to 40 percent.

This unit makes up about 48 percent of the county. It is about 45 percent Mimosa soils, 15 percent Barfield soils, 10 percent Rock outcrop, and 30 percent soils of minor extent (fig. 2).

The Mimosa soils are deep, and the Barfield soils are shallow. Both soils have a brownish, clayey or loamy surface layer and a clayey subsoil. The Rock outcrop is hard limestone bedrock.

The soils of minor extent in this unit are the well drained Ashwood, Armour, and Harpeth soils; the moderately well drained Byler soils; and the somewhat poorly drained Eagleville soils.

This unit is used mainly for pasture. The remaining areas are used for woodland or row crops.

This unit is suited to pasture and poorly suited to row crops and to most urban uses. The slope, slow permeability, depth to rock, and the Rock outcrop are limitations. They are difficult to overcome.

2. Inman-Barfield-Hampshire

Shallow to deep, well drained soils that have a clayey subsoil; on gently rolling to hilly uplands

This map unit is in the southern part of the county. It is in the Nashville Basin. Slopes are mainly less than 35 percent.

This unit makes up about 20 percent of the county. It is about 26 percent Inman soils, 25 percent Barfield soils, 16 percent Hampshire soils, and 33 percent soils of minor extent (fig. 3).

The Inman soils are moderately deep, and the Barfield soils are shallow. Both soils have a brownish, clayey or loamy surface layer and a clayey subsoil. The Hampshire soils are deep. They have a brownish, loamy surface layer and a brownish, clayey subsoil.

The soils of minor extent in this unit are the well drained Harpeth and Talbott soils and the moderately well drained Lindell and Nesbitt soils.

This unit is used mainly for pasture and woodland. The remaining areas are idle or used for row crops.

This unit is suited to pasture and poorly suited to row crops and to most urban uses. Depth to rock, the slope, and slow permeability are limitations. They are difficult to overcome.

3. Harpeth-Arrington

Very deep, well drained soils that have a loamy subsoil; on nearly level flood plains and gently sloping to gently rolling high terraces and uplands

This map unit is in the central part of the county. It is along Goose Creek, Little Goose Creek, and Dixon Creek in the Nashville Basin. Slopes are mainly 0 to 12 percent.

This unit makes up about 10 percent of the county. It is about 50 percent Harpeth soils, 30 percent Arrington soils, and 20 percent soils of minor extent (fig. 4).

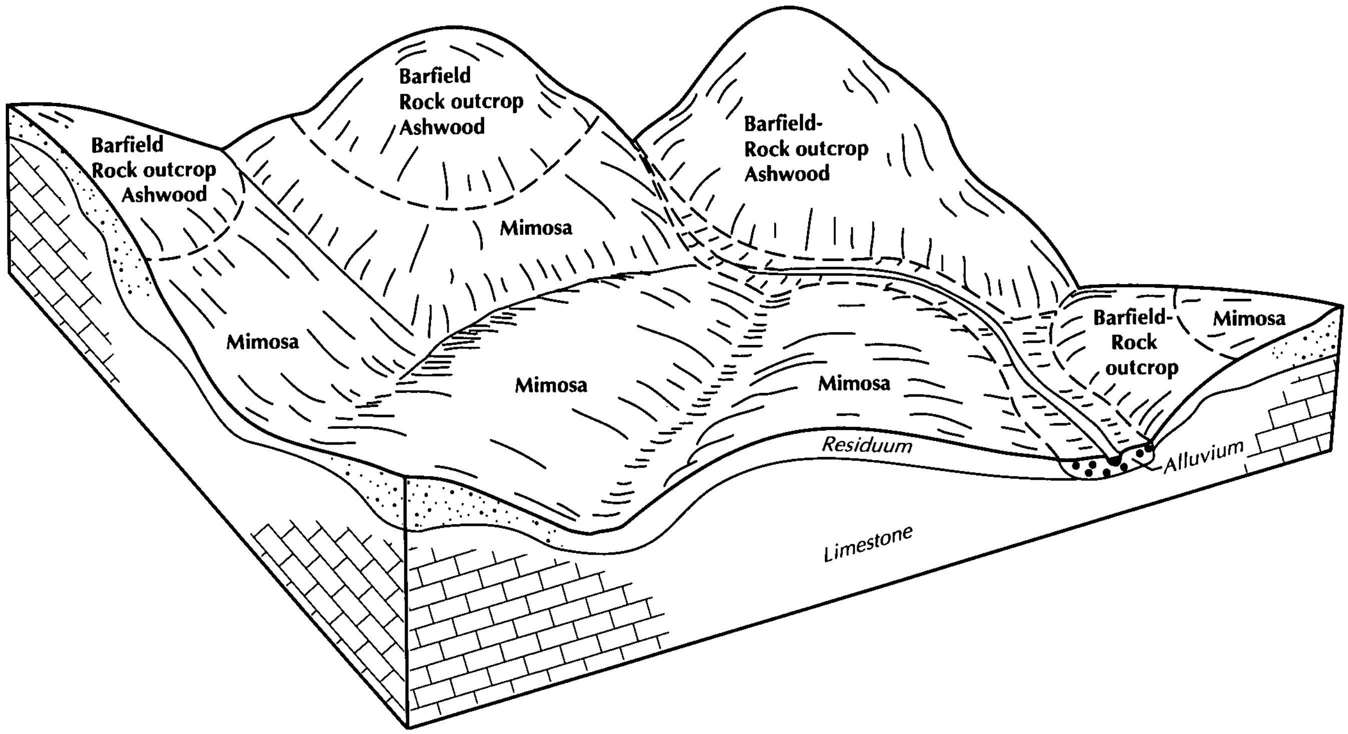

Figure 2.—Typical pattern of soils and underlying material in the Mimosa-Barfield-Rock outcrop general soil map unit.

The Harpeth and Arrington soils have a brownish, loamy surface layer and subsoil.

The soils of minor extent in this unit are the moderately well drained Byler, Egam, and Lindell soils and the well drained Armour and Mimosa soils.

This unit is used mainly for row crops. The remaining areas are used as pasture.

This unit is well suited to pasture and row crops. Many areas of this map unit are suited to urban uses. The Arrington soils, however, are not suited because of flooding.

4. Lindell-Nesbitt-Waynesboro

Very deep, moderately well drained and well drained soils that have a loamy or clayey subsoil; on nearly level flood plains and gently sloping to hilly uplands

This map unit is in the southern part of the county. It is along Old Hickory Lake. Slopes are mainly 0 to 20 percent.

This unit makes up about 8 percent of the county. It is about 32 percent Lindell soils, 22 percent Nesbitt soils, 15 percent Waynesboro soils, and 31 percent soils of minor extent.

The Lindell and Nesbitt soils are moderately well drained. They have a brownish, loamy surface layer and subsoil. The Waynesboro soils are well drained. They have a brownish, loamy surface layer and a reddish, clayey subsoil.

The soils of minor extent in this unit are the moderately well drained Byler and Egam soils, the poorly drained Melvin soils, and the well drained Arrington and Holston soils.

This unit is used mainly for pasture and row crops. It is well suited to these uses. Many areas of this map unit are suited to urban uses. The Lindell soils, however, are not suited because of flooding.

5. Dellrose-Mimosa

Very deep and deep, well drained soils that have a loamy or clayey subsoil; on gently rolling to very hilly uplands

This map unit is in the northeastern part of the county. It is in the Nashville Basin. Slopes are mainly 5 to 45 percent.

This unit makes up about 6 percent of the county. It is about 45 percent Dellrose soils, 25 percent Mimosa soils, and 30 percent soils of minor extent.

The Dellrose soils are very deep. They have a brownish, loamy surface layer and subsoil. The Mimosa soils are deep. They have a brownish, loamy and clayey surface layer and a clayey subsoil.

The soils of minor extent in this unit are the well drained Armour, Ashwood, and Ocana soils and the somewhat excessively drained Sulphura soils.

This unit is used mainly as pasture and woodland. The few remaining areas are used as cropland.

This unit is well suited to pasture and poorly suited to row crops and to most urban uses. Depth to rock, the slope, and slow permeability are limitations. They are difficult to overcome.

6. Talbott-Bradyville

Moderately deep and deep, well drained soils that have a clayey subsoil; on undulating to rolling uplands

This map unit is in the southern part of the county. It is in the Nashville Basin. Slopes are mainly less than 15 percent.

This unit makes up about 4 percent of the county. It is about 60 percent Talbott soils, 20 percent Bradyville soils, and 20 percent soils of minor extent.

The Talbott soils are moderately deep, and the Bradyville soils are deep. Both soils have a brownish, loamy surface layer and a reddish, clayey subsoil.

The soils of minor extent in this unit are the well drained Barfield and Armour soils and the moderately well drained Lindell soils.

This unit is used mainly for pasture. The remaining areas are used for woodland or row crops.

This unit is suited to pasture and poorly suited to row crops and to many urban uses. Depth to rock, the slope, and moderately slow permeability are limitations. They are difficult to overcome.

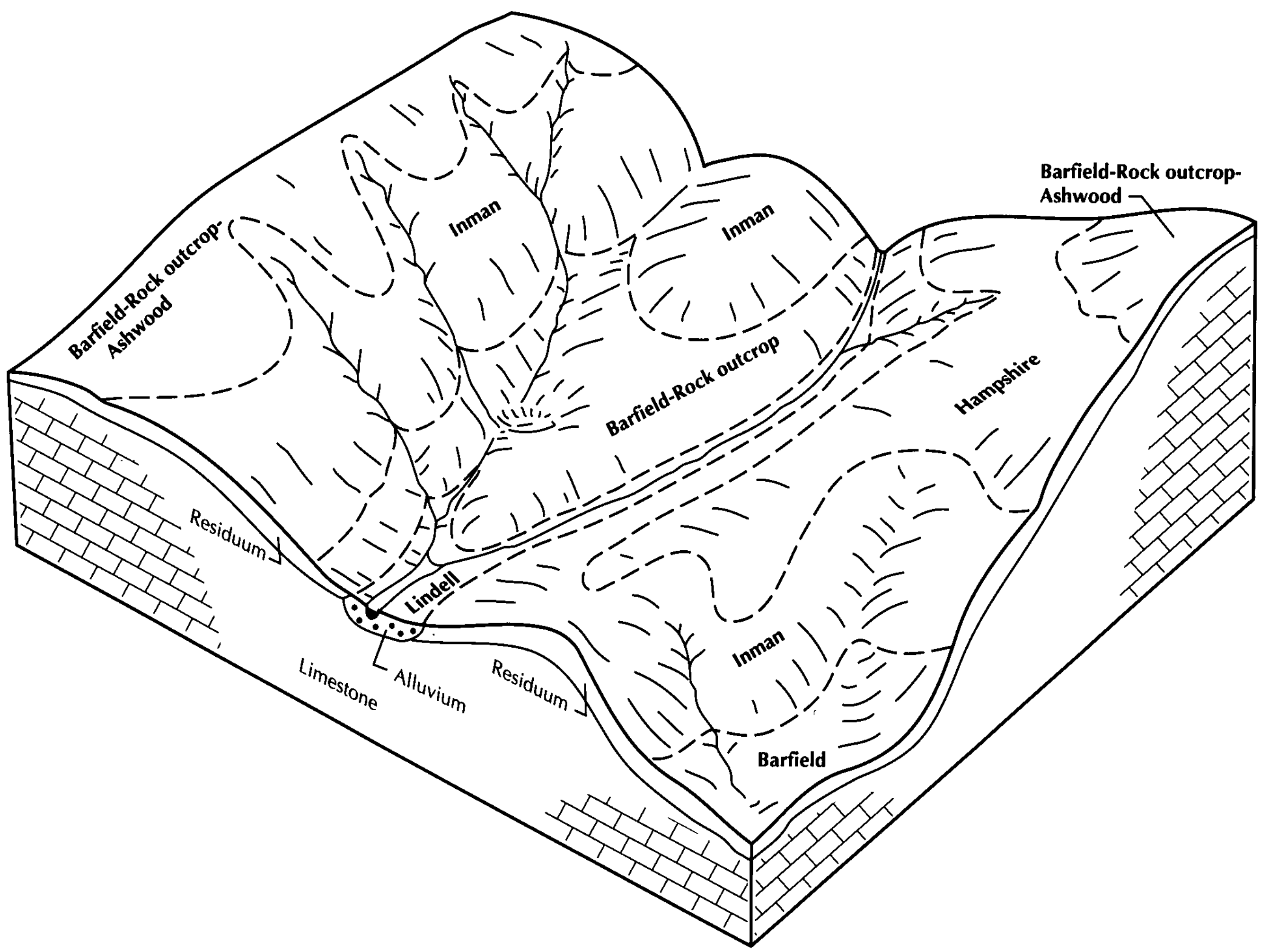

Figure 3.—Typical pattern of soils and underlying material in the Inman-Barfield-Hampshire general soil map unit.

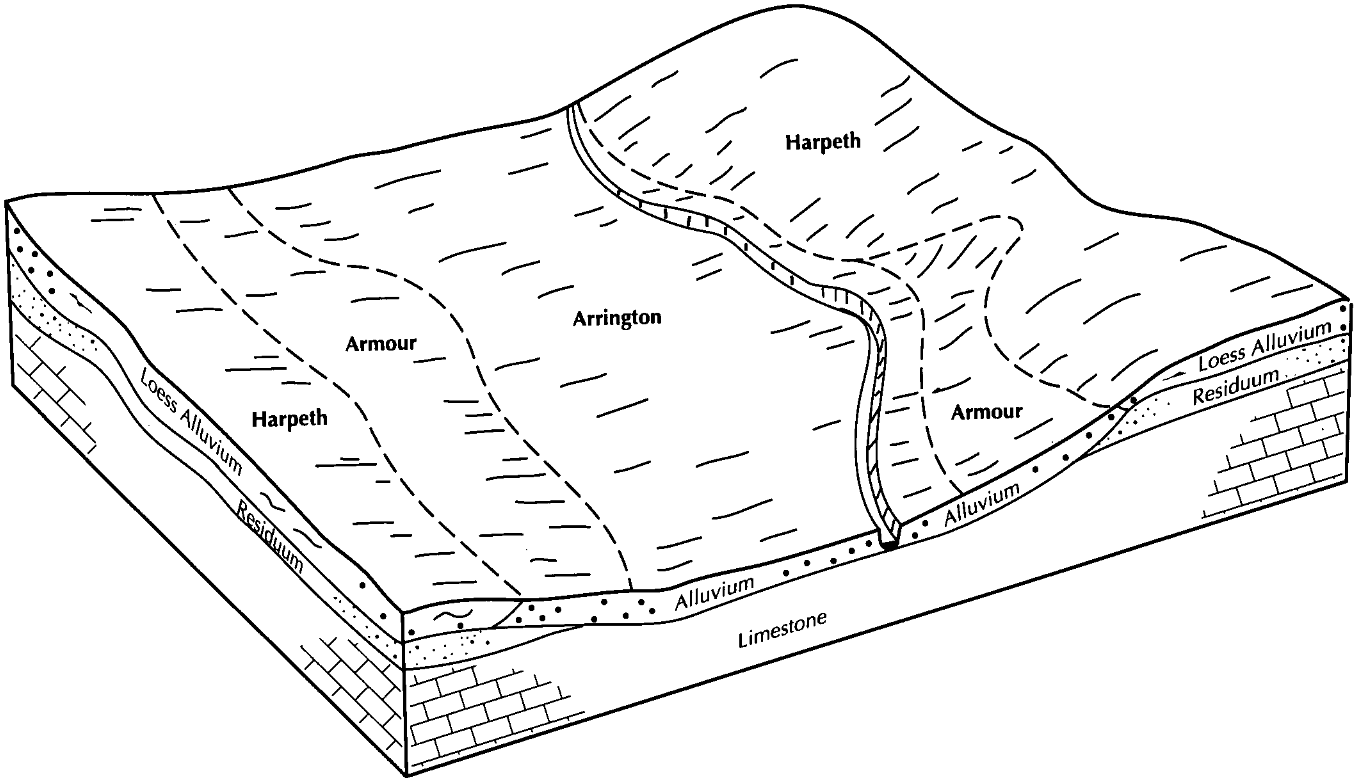

Figure 4.—Typical pattern of soils and underlying material in the Harpeth-Arrington general soil map unit.

7. Sulphura-Dellrose

Moderately deep and very deep, somewhat excessively drained and well drained soils that have a loamy subsoil; on hilly to steep uplands

This map unit is on the Highland Rim Escarpment in the northwestern and northeastern parts of the county. Slopes are 12 to 65 percent.

This unit makes up about 4 percent of the county. It is about 60 percent Sulphura soils, 15 percent Dellrose soils, and 25 percent soils of minor extent.

The Sulphura soils are moderately deep and somewhat excessively drained, and the Dellrose soils are very deep and well drained. Both soils have a brownish, loamy surface layer and subsoil.

The soils of minor extent in this unit are the well drained Ocana, Mimosa, and Sugargrove soils.

This unit is used mainly as woodland. The few remaining areas are used as pasture.

This unit is poorly suited to row crops, pasture, and most urban uses. The slope and depth to rock are limitations. They are difficult to overcome for most urban uses.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of 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. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a 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 or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas 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 "included" areas that belong to other taxonomic classes.

Most included 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, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. 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 included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas 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 included areas 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, but if intensive use of small areas is planned, 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.* Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, 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, Mimosa silt loam, 5 to 12 percent slopes, eroded, is a phase of the Mimosa series.

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

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. Barfield-Rock outcrop-Ashwood complex, 5 to 20 percent slopes, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. 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 or miscellaneous areas.

Soil Descriptions

AmB—Armour silt loam, 2 to 5 percent slopes

This soil is very deep and well drained. It is on elongated, gently sloping terraces near drainageways.

Typically, the surface layer and subsurface layer are dark yellowish brown silt loam about 11 inches thick. The subsoil, from a depth of 11 to 60 inches, is strong brown silty clay loam that has brownish mottles.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are soils that contain up to 25 percent gravel in the lower part; soils that are in small depressions and that have a thick, dark brown surface layer and subsurface layer; and a few scattered small areas of moderately well drained soils.

Most areas of this map unit are used for row crops. Most of the remaining areas are used as pasture. The Armour soil is well suited to row crops, small grains, hay, and pasture. Crop residue management and contour farming help to control erosion and reduce the runoff rate.

This soil is well suited to trees. Black walnut and yellow-poplar are suitable trees to plant for commercial production. No significant management concerns affect woodland.

This soil is suited to most urban uses. Low strength is a limitation on sites for local roads and streets. It can be overcome by engineering practices.

The capability subclass is IIe.

Ar—Arrington silt loam, occasionally flooded

This soil is very deep and well drained. It is on nearly level flood plains along rivers, creeks, and narrow drainageways. Slopes range from 0 to 2 percent.

Typically, the surface layer and subsurface layer are dark brown and very dark grayish brown silt loam about 31 inches thick. The subsoil, from a depth of 31 to 50 inches, is dark brown silty clay loam. The underlying material, from a depth of 50 to 60 inches, is dark grayish brown silty clay loam that has brownish mottles.

This soil is slightly acid or neutral. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

This soil is subject to occasional flooding for brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas of soils that have a clayey subsoil and other small areas of soils that are less than 60 inches deep over bedrock.

Most areas of this map unit are used for row crops. Most of the remaining areas are used as pasture. The Arrington soil is well suited to row crops, small grains, hay, and pasture. The occasional flooding is not a serious hazard for farming.

A few areas of this soil are wooded. This soil is well suited to woodland, nursery plants, and specialty crops, such as Christmas trees. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is not suited to most urban uses because of the flooding.

The capability subclass is IIw.

BaC—Barfield-Rock outcrop complex, 5 to 20 percent slopes

This map unit consists of Rock outcrop and the shallow, well drained Barfield soil on rolling and hilly uplands. It is dominantly on hillsides. The Barfield soil and Rock outcrop are so intricately intermingled that they could not be mapped separately at the selected scale. This map unit consists of about 50 percent Barfield soil, 40 percent Rock outcrop, and 10 percent included soils.

Typically, the Barfield soil has a surface layer of very dark grayish brown silty clay loam about 6 inches thick. The upper part of the subsoil, from a depth of 6 to 13 inches, is dark brown clay that has brownish mottles. The lower part, from a depth of 13 to 18 inches, is brown clay that has brownish mottles. Limestone bedrock is at a depth of 18 inches.

The Barfield soil is slightly acid to slightly alkaline. Permeability is moderately slow, and available water capacity is low. The root zone is shallow and is somewhat difficult for roots to penetrate.

Typically, the Rock outcrop is hard limestone bedrock. In most areas, it crops out up to 12 inches above the surface.

Included in mapping are small scattered areas of soils that are more than 20 inches deep over bedrock and a few small areas that have less than 10 percent Rock outcrop.

Nearly all areas of this map unit are used as woodland or pasture. This map unit is poorly suited to hay and pasture. Droughtiness, the Rock outcrop, the shallow rooting depth, and the slope are limitations. Selection of drought-resistant plants, applications of lime and fertilizer, controlled grazing, and adequate weed control are good pasture-management practices.

This map unit is not suited to use as commercial woodland. Low production is a major limitation. Eastern redcedar can be grown for use as fence posts. The seedling mortality rate is high. Windthrow is a hazard because of the shallow rooting depth.

This map unit is poorly suited to most urban uses. The depth to rock, the shrink-swell potential, and low strength are limitations. They are difficult to overcome.

The capability subclass is VIIs in areas of the Barfield soil.

BfC—Barfield-Rock outcrop-Ashwood complex, 5 to 20 percent slopes

This map unit consists of the shallow, well drained Barfield soil; Rock outcrop; and the moderately deep, well drained Ashwood soil. It is on rolling and hilly uplands, mainly on hillsides and ridgetops. The areas of soils and Rock outcrop are too intricately intermingled to be mapped separately at the selected scale. This map unit consists of about 50 percent Barfield soil, 30 percent Rock outcrop, 15 percent Ashwood soil, and 5 percent included soils.

Typically, the Barfield soil has a surface layer of very dark grayish brown silty clay loam about 6 inches thick. The upper part of the subsoil, from a depth of 6 to 13 inches, is dark brown clay. The lower part, from a depth of 13 to 18 inches, is brown clay that has brownish mottles. Limestone bedrock is at a depth of 18 inches.

The Barfield soil is slightly acid to slightly alkaline. Permeability is moderately slow, and available water capacity is low. The root zone is shallow and is somewhat difficult for roots to penetrate.

Typically, the Rock outcrop is hard limestone bedrock. In most areas, it crops out up to 12 inches above the surface.

Typically, the Ashwood soil has a surface layer of very dark grayish brown silty clay loam about 5 inches thick. The upper part of the subsoil, from a depth of 5 to 16 inches, is very dark grayish brown clay. The lower part, from a depth of 16 to 28 inches, is yellowish brown clay. Limestone bedrock is at a depth of 28 inches.

The Ashwood soil is moderately acid to slightly alkaline. Permeability is moderately slow, and available water capacity is low. The root zone is moderately deep and is difficult for roots to penetrate in the lower part.

Included in mapping are small scattered areas of soils that are more than 40 inches deep over bedrock.

Most areas of this map unit are used as woodland or pasture. This map unit is poorly suited to pasture and hay. Droughtiness, the Rock outcrop, the restricted rooting depth, and the slope are limitations. Selection of drought-resistant plants, applications of lime and fertilizer, controlled grazing, and adequate weed control are good pasture-management practices.

This map unit is not suited to commercial woodland. Low production is a major limitation. Eastern redcedar can be grown for local use. The seedling mortality rate and windthrow are management concerns.

This map unit is not suited to most urban uses. The depth to rock, the slope, the shrink-swell potential, and the restricted permeability are limitations. They are difficult to overcome.

The capability subclass is VIs.

BfF—Barfield-Rock outcrop-Ashwood complex, 20 to 70 percent slopes

This map unit consists of the shallow, well drained Barfield soil; Rock outcrop; and the moderately deep, well drained Ashwood soil. It is on steep uplands, mainly on hillsides. The areas of soils and Rock outcrop are too intricately intermingled to be mapped separately at the selected scale. This map unit consists of about 50 percent Barfield soil, 30 percent Rock outcrop, 15 percent Ashwood soil, and 5 percent included soils.

Typically, the Barfield soil has a surface layer of very dark grayish brown silty clay loam about 6 inches thick. The upper part of the subsoil, from a depth of 6 to 13 inches, is dark brown clay. The lower part, from a depth of 13 to 18 inches, is brown clay that has

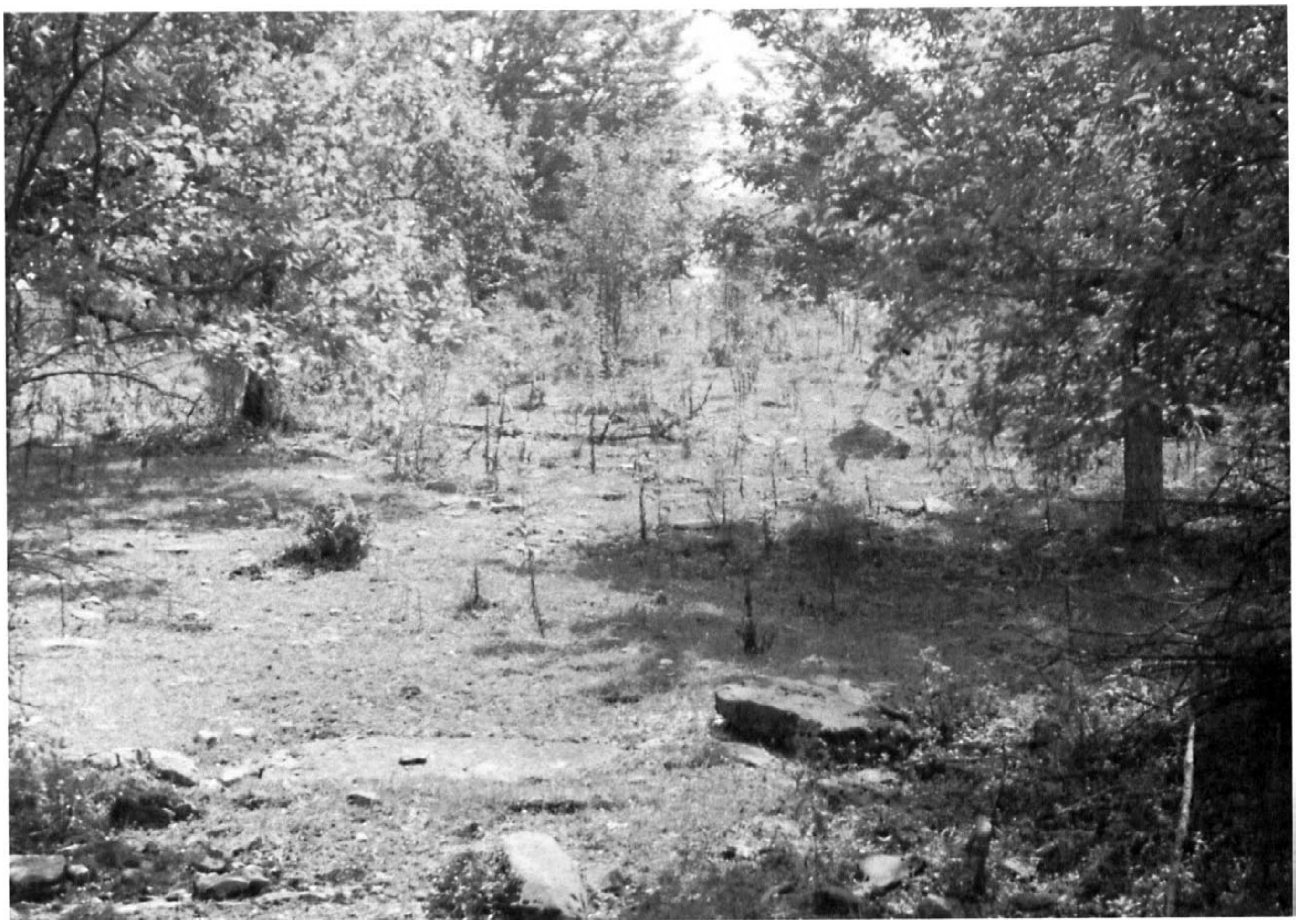

Figure 5.—An area of Barfield-Rock outcrop-Ashwood complex, 20 to 70 percent slopes, which is poorly suited to farming.

brownish mottles. Limestone bedrock is at a depth of 18 inches.

The Barfield soil is slightly acid to slightly alkaline. Permeability is moderately slow, and available water capacity is low. The root zone is shallow and is difficult for roots to penetrate.

Typically, the Rock outcrop is hard limestone bedrock. In most areas, it crops out up to 12 inches above the surface.

Typically, the Ashwood soil has a surface layer of very dark grayish brown silty clay loam about 5 inches thick. The upper part of the subsoil, from a depth of 5 to 16 inches, is very dark grayish brown clay. The lower part, from a depth of 16 to 28 inches, is yellowish brown clay. Limestone bedrock is at a depth of 28 inches.

The Ashwood soil is moderately acid to slightly alkaline. Permeability is moderately slow, and available water capacity is low. The root zone is moderately deep and is difficult for roots to penetrate in the lower part.

Included in mapping are small scattered areas of soils that are more than 40 inches deep over bedrock.

A few areas of this map unit are used as pasture. This map unit is poorly suited to pasture and hay. Droughtiness, the Rock outcrop, the restricted rooting depth, and the slope are limitations. They are difficult to overcome (fig. 5).

Most areas of this map unit are used as woodland. This map unit is not suited to commercial woodland. Low production is a major limitation. Eastern redcedar can be grown for local use. The seedling mortality rate, equipment limitations, erosion, and windthrow are management concerns.

This map unit is not suited to most urban uses because of the slope and the depth to rock. The slope can be overcome by special designs and engineering procedures that are compatible with the shape of the land.

The capability subclass is VIIs.

BrB2—Bradyville silt loam, 2 to 5 percent slopes, eroded

This soil is deep and well drained. It is on undulating uplands, commonly on elongated ridges. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 15 inches, is strong brown silty clay loam that has reddish mottles. The lower part, from a depth of 15 to 53 inches, is yellowish red, red, and strong brown clay that has brownish and reddish mottles. Limestone bedrock is at a depth of 53 inches.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately slow, and available water capacity is moderate. The root zone is deep and is easily penetrated by roots.

Included with this soil in mapping are loamy soils in depressions up to 3 acres in size and small areas of soils that are less than 40 inches deep over bedrock.

Many areas of this map unit are used as pasture. The remaining areas are used for hay or row crops or are idle. The Bradyville soil is well suited to row crops, small grains, pasture, and hay. Crop residue management and contour farming help to control further erosion.

Some areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and eastern white pine are suitable trees to plant. No significant management concerns affect woodland.

This soil is poorly suited to most urban uses. The moderately slow permeability is a limitation on sites for septic tank absorption fields. Constructing a system that includes additional footage in the absorption field lines helps to overcome this limitation. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing suitable base material for the construction of road surfaces. The shrink-swell potential is a limitation affecting dwellings without basements. The depth to rock and the shrink-swell potential are limitations affecting dwellings with basements. Reinforcing foundations minimizes problems related to the shrink-swell potential.

The capability subclass is IIe.

BrC2—Bradyville silt loam, 5 to 12 percent slopes, eroded

This soil is deep and well drained. It is on gently rolling uplands, commonly on hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 15 inches, is strong brown silty clay loam that has reddish mottles. The lower part, from a depth of 15 to 53 inches, is yellowish red, red, and strong brown clay that has brownish and reddish mottles. Limestone bedrock is at a depth of 53 inches.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately slow, and available water capacity is moderate. The root zone is deep and is easily penetrated by roots.

Included with this soil in mapping are small scattered areas of soils that are less than 40 inches deep over bedrock and areas of severely eroded soils that have a clayey surface layer.

Most areas of this map unit are used as pasture. Most of the remaining areas are used for hay or are idle. The Bradyville soil is suited to row crops and well suited to pasture and hay. Contour farming and crop residue management help to control further erosion in cultivated areas. Grazing before plants are well established or grazing when the soil is wet may damage the soil and plants and allow invasion of undesirable species.

Some areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and eastern white pine are suitable trees to plant. No significant management concerns affect woodland.

This soil is poorly suited to most urban uses. The moderately slow permeability is a limitation on sites for septic tank absorption fields. Constructing a system that includes additional footage in the absorption field lines helps to overcome this limitation. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing suitable base material for the construction of road surfaces. The shrink-swell potential and the slope are limitations on sites for dwellings without basements. The depth to rock, the slope, and the shrink-swell potential are limitations on sites for dwellings with basements. Reinforcing foundations minimizes problems related to the shrink-swell potential.

The capability subclass is IIIe.

ByB—Byler silt loam, 1 to 4 percent slopes

This soil is very deep and moderately well drained. It has a fragipan in the lower part of the subsoil. Commonly, it is on nearly level and gently sloping terraces near drainageways.

Typically, the surface layer is brown silt loam about 9 inches thick. The upper part of the subsoil, from a depth of 9 to 14 inches, is strong brown silt loam that has brownish mottles. The next part of the subsoil, from a depth of 14 to 22 inches, is yellowish brown silty clay loam. The lower part of the subsoil, to a depth of 42 inches, is a fragipan. It is dominantly mottled, very firm and brittle silt loam. Below this to a depth of 60 inches is mottled very firm clay.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate above the fragipan and slow in the fragipan. Available water capacity is moderate. The root zone is very deep, but root penetration is somewhat restricted by the fragipan.

Included with this soil in mapping are small areas of poorly drained and somewhat poorly drained soils and soils that do not have a fragipan. These inclusions are in depressions and along drainageways.

Most areas of this map unit are used for pasture and hay. Some areas are used for row crops or woodland. The Byler soil is well suited to small grains, pasture, and hay and for row crops that have a short growing season. It is poorly suited to some deep-rooted crops and crops that are not water tolerant. Grazing before plants are well established at the beginning of the growing season or grazing when the soil is wet may damage the soil and plants and allow invasion of undesirable species.

A few areas of this soil are wooded. This soil is well suited to the production of yellow-poplar and black walnut. Windthrow is a management concern because of the restricted rooting depth.

This soil is poorly suited to most urban uses. Wetness and the slow permeability in the fragipan are limitations on sites for septic tank absorption fields. A specially designed system may be necessary to overcome these limitations. The wetness is also a limitation on sites for dwellings with or without basements. Extending foundations well above ground level and sealing basement walls help to overcome this limitation. Low strength and the wetness are limitations on sites for local roads and streets. Providing a suitable base material and constructing road surfaces well above ground level help to overcome these limitations.

The capability subclass is IIw.

CpB—Capshaw silt loam, 2 to 6 percent slopes

This soil is very deep and moderately well drained. It is on gently sloping terraces and footslopes.

Typically, the surface layer is brown silt loam about 9 inches thick. The upper part of the subsoil, from a depth of 9 to 18 inches, is yellowish brown silty clay loam. The next part of the subsoil, from a depth of 18 to 41 inches, is yellowish brown clay that has brownish and grayish mottles. The lower part of the subsoil, from a depth of 41 to 60 inches, is light brownish gray clay that has brownish mottles.

This soil generally is moderately acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and available water capacity is moderate. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are a few scattered small areas of well drained soils, soils that have a fragipan, and outcrops of rock.

Many areas of this map unit are used as pasture. Most of the remaining areas are used for row crops. The Capshaw soil is suited to row crops and well suited to hay and pasture. Contour farming and crop residue management help to control erosion in cultivated areas. A high level of forage production is possible if pastures are renovated often enough to maintain desired species.

Several areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is poorly suited to most urban uses. The slow permeability and wetness are limitations on sites for septic tank absorption fields. A specially designed system may be necessary to overcome these limitations. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing suitable base material for the construction of road surfaces. The shrink-swell potential is a limitation on sites for dwellings without basements. The shrink-swell potential and the wetness are limitations on sites for residential buildings with basements. Reinforcing and waterproofing walls and foundations help to overcome these limitations.

The capability subclass is IIe.

DeD2—Dellrose gravelly silt loam, 12 to 20 percent slopes, eroded

This soil is very deep and well drained. It is on footslopes of hilly uplands. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark brown gravelly silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is brown gravelly silt loam. The lower part, from a depth of 11 to 60 inches, is strong brown gravelly silty clay loam that has brownish mottles.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately rapid, and available water capacity is moderate. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are small scattered areas of soils that are on narrow benches and that are less than 40 inches deep over shale bedrock and soils that have a subsoil of gravelly clay below a depth of about 40 inches. A few small areas of the included soils have gullies 2 to 8 feet wide and 1 to 3 feet deep. A few outcrops of rock are at the upper edges of a few mapped areas.

Most areas of this map unit are used as pasture or woodland. The Dellrose soil is poorly suited to row crops because of the hazard of further erosion. If cultivated crops are grown, crop rotations should be long term and should consist mainly of grasses and legumes. This soil is well suited to pasture and hay. Proper management includes additions of lime and fertilizer, proper seeding rates and mixtures, reduced stocking rates during periods of slow growth, and a good plan for harvesting and weed control.

Many of the areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and eastern white pine are suitable trees to plant. No significant management concerns affect woodland.

This soil is poorly suited to many urban uses because of the slope. This limitation can be overcome by using reinforced foundations and engineering designs that are compatible with the shape of the land.

The capability subclass is IVe.

DeE2—Dellrose gravelly silt loam, 20 to 30 percent slopes, eroded

This soil is very deep and well drained. It is on footslopes of very hilly uplands. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark brown gravelly silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is brown gravelly silt loam. The lower part, from a depth of 11 to 60 inches, is strong brown gravelly silty clay loam that has brownish mottles.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately rapid, and available water capacity is moderate. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are small scattered areas of soils that are on narrow benches and that are less than 40 inches deep over shale bedrock and soils that have a subsoil of gravelly clay below a depth of about 40 inches. A few small areas of the included soils have gullies 2 to 8 feet wide and 1 to 3 feet deep. A few outcrops of rock are at the upper edges of a few mapped areas.

Most areas of this map unit are used as pasture or woodland. The Dellrose soil is suited to pasture. Weed control and the maintenance of an adequate stand of grass are difficult because of the slope.

Many of the areas of this soil are wooded. This soil is suited to the production of yellow-poplar and eastern white pine. It has no significant management concerns.

This soil is poorly suited to most urban uses because of the slope. This limitation can be minimized by using reinforced foundations and engineering designs that are compatible with the shape of the land. This soil is subject to slippage where deep cuts are made.

The capability subclass is VIe.

Ea—Eagleville silty clay loam, occasionally flooded

This soil is moderately deep and somewhat poorly drained. It is on nearly level flood plains. Slopes range from 0 to 2 percent.

Typically, the surface layer is very dark grayish brown silty clay loam about 6 inches thick. The subsurface layer, from a depth of 6 to 18 inches, is very dark grayish brown silty clay. The subsoil, from a depth of 18 to 30 inches, is dark gray clay that has brownish mottles. The underlying material, from a depth of 30 to 37 inches, is mottled gray, olive gray, and light olive brown clay. Limestone bedrock is at a depth of 37 inches.

This soil is moderately acid to slightly alkaline throughout. Permeability is slow, and available water capacity is moderate. The root zone is moderately deep and is somewhat difficult for roots to penetrate because of the very firm subsoil.

This soil is subject to occasional flooding for brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas in slight depressions that are poorly drained, a few areas of soils that are less than 20 inches deep over bedrock, and a few outcrops of limestone. These inclusions are in scattered areas.

Most areas of this map unit are used as pasture. The Eagleville soil is suited to pasture plants that are adapted to wet conditions. Grazing when the soil is wet causes compaction and poor tilth. This soil is poorly suited to most row crops because of the wetness.

Some areas of this soil are wooded. This soil is well suited to bottom-land hardwoods. Yellow-poplar and cherrybark oak are suitable trees to plant. Equipment limitations and seedling mortality are management concerns related to the wetness. Restricting the use of equipment to dry periods minimizes damage to the soil.

Planting on narrow ridges increases the seedling survival rate.

This soil is not suited to most urban uses because of the hazard of flooding. The depth to rock, the shrink-swell potential, wetness, and low strength are limitations for many urban uses.

The capability subclass is IIIw.

Eg—Egam silt loam, occasionally flooded

This soil is very deep and moderately well drained. It is on nearly level flood plains along drainageways. Slopes range from 0 to 2 percent.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer, from a depth of 8 to 22 inches, is very dark brown silty clay loam. The upper part of the subsoil, from a depth of 22 to 36 inches, is very dark brown clay. The lower part, from a depth of 36 to 60 inches, is dark yellowish brown clay that has brownish mottles.

This soil is slightly acid or neutral throughout. Permeability is moderately slow, and available water capacity is high. The root zone is very deep.

This soil is subject to occasional flooding for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are a few areas of somewhat poorly drained soils in depressions and a few areas of soils that are less than 60 inches deep over bedrock along drainageways.

Many areas of this map unit are used for row crops. Most of the remaining areas are used as pasture. The Egam soil is well suited to row crops, small grains, hay, and pasture. The flooding generally occurs during winter and early spring and rarely damages row crops. Grazing when the soil is wet may damage the soil and plants and allow invasion of undesirable species.

A few areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is not suited to most urban uses because of the flooding. The restricted permeability, wetness, and low strength are management concerns.

The capability subclass is IIw.

HaC2—Hampshire silt loam, 5 to 12 percent slopes, eroded

This soil is deep and well drained. It is on gently rolling uplands, dominantly on hillsides and narrow ridgetops. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The upper part of the subsoil, from a depth of 9 to 16 inches, is strong brown clay. The lower part, from a depth of 16 to 36 inches, is strong brown clay that has brownish and reddish mottles. The underlying material, from a depth of 36 to 49 inches, is strong brown very channery clay loam that has brownish and reddish mottles. Below this, from a depth of 49 to 60 inches, are interbedded strata of weathered rock.

This soil is slightly acid to strongly acid. Permeability is moderately slow, and available water capacity is moderate. The root zone is deep and is easily penetrated by roots.

Included with this soil in mapping are small, narrow areas of well drained and moderately well drained, deep loamy soils along drainageways.

Most areas of this map unit are used as pasture and woodland. Some small areas are used for row crops. The Hampshire soil is suited to row crops and well suited to small grains, hay, and pasture. The hazard of further erosion is a management concern if cultivated crops are grown. Winter cover crops and crop rotations reduce the runoff rate and help to control further erosion. Selection of drought-resistant plants, applications of lime and fertilizer, controlled grazing, and adequate weed control are good pasture-management practices.

Some areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and eastern white pine are suitable trees to plant. The hazard of erosion is a management concern in the steeper areas. It can be reduced by maintaining cover on the forest floor.

This soil is poorly suited to most urban uses. The moderately slow permeability is a limitation on sites for septic tank absorption fields. Constructing a system that includes additional footage in the absorption field lines helps to overcome this limitation. Low strength is a limitation on sites for local roads and streets. Engineering practices that provide suitable subgrade material help to overcome this limitation. The slope and the shrink-swell potential are limitations on sites for dwellings. Reinforced foundations and engineering designs that are compatible with the contour of the land help to overcome these limitations.

The capability subclass is IIIe.

HaD2—Hampshire silt loam, 12 to 20 percent slopes, eroded

This soil is deep and well drained. It is on hilly uplands, dominantly on hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The upper part of the subsoil, from a depth of 9 to 16 inches, is strong brown clay. The lower part, from a depth of 16 to 36 inches, is strong brown clay that has brownish and reddish mottles. The underlying material, from a depth of 36 to 49 inches, is strong brown very channery clay loam that has brownish and reddish mottles. Below this, from a depth of 49 to 60 inches, are interbedded strata of weathered rock.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately slow, and available water capacity is moderate. The root zone is deep and is easily penetrated by roots.

Included with this soil in mapping are small, narrow areas of deep, loamy, well drained and moderately well drained soils along drainageways. Also included are small areas of soils that have a slope of more than 20 percent, commonly in the upper parts of the mapped areas. These areas commonly have soils that are less than 40 inches deep over bedrock.

Many areas of this map unit are used as pasture. Most of the remaining areas are used as woodland. The Hampshire soil is poorly suited to row crops because of the hazard of further erosion. If cultivated crops are grown, crop rotations should be long term and should consist mainly of grasses and legumes. This soil is suited to pasture. The slope is a limitation affecting the maintenance of an adequate stand of grass.

Some areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and eastern white pine are suitable trees to plant. The hazard of further erosion is a management concern in the steeper areas. It can be reduced by maintaining cover on the forest floor.

This soil is poorly suited to most urban uses. The slope and the moderately slow permeability are limitations on sites for septic tank absorption fields. Constructing a system that conforms to the shape of the site and that includes additional footage in the absorption field lines helps to overcome these limitations. The construction of dwellings should include engineering practices that help to overcome the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using suitable subgrade material help to overcome these limitations.

The capability subclass is IVe.

HD—Hapludults, gravelly, gently rolling

This map unit consists of deep and very deep, well drained and somewhat excessively drained soils on uplands. These soils are on narrow ridges. Slopes range from 5 to 12 percent.

Commonly, the soils vary considerably in color and texture within short distances. In many places, the surface layer and the upper part of the subsoil are brownish gravelly or very gravelly loam or clay loam. The lower part of the subsoil and the underlying material are reddish very gravelly or extremely gravelly loam or sandy loam having brownish mottles.

These soils range from strongly acid to extremely acid. Permeability is moderately rapid or rapid, and available water capacity is low. Commonly, the root zone is severely restricted in the lower part of the subsoil by the high content of gravel.

Included in this map unit are small areas of soils that contain less than 15 percent gravel and small areas where the depth to bedrock is less than 60 inches.

Most areas of this map unit are used as pasture. A few small areas are used as a source of fill material for road building. This map unit is poorly suited to row crops, pasture, and hay because of droughtiness.

A few areas of this map unit are wooded. This unit is suited to eastern white pine and upland oak. The seedling mortality rate is high because of droughtiness.

This map unit is well suited to many urban uses.

A capability class has not been assigned.

HhB2—Harpeth silt loam, 2 to 5 percent slopes, eroded

This soil is very deep and well drained. It is on gently sloping uplands and old high terraces, mostly on broad hilltops. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The upper part of the subsoil, from a depth of 9 to 14 inches, is strong brown and brown silt loam. The next part of the subsoil, from a depth of 14 to 47 inches, is strong brown silty clay loam. The lower part of the subsoil, from a depth of 47 to 60 inches, is strong brown clay loam that has brownish mottles.

This soil generally is strongly acid to slightly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of moderately well drained soils at the head of drains and along drainageways. Also included are small areas of soils that are clayey throughout the subsoil.

Figure 6.—An area of Harpeth silt loam, 2 to 5 percent slopes, eroded, which is prime farmland. Tall fescue and clover are grown in the pasture and hayland in the foreground. Burley tobacco is grown in the background.

Most areas of this map unit are used as pasture. Most of the remaining areas are used for row crops. The Harpeth soil is well suited to row crops, small grains, pasture, and hay (fig. 6). Crop residue management and contour farming help to control further erosion in cultivated areas. A high level of forage production is possible if pastures are well managed.

A few areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is well suited to most urban uses. Low strength is a limitation on sites for local roads and streets. Replacing the upper part of the soil with suitable subgrade material helps to overcome this limitation.

The capability subclass is IIe.

HhC2—Harpeth silt loam, 5 to 10 percent slopes, eroded

This soil is very deep and well drained. It is on gently rolling uplands and high terraces, mostly on broad hilltops. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The upper part of the subsoil, from a depth of 9 to 14 inches, is strong brown and brown silt loam. The next part of the subsoil, from a depth of 14 to 47 inches, is strong brown silty clay loam. The lower part of the subsoil, from a depth of 47 to 60 inches, is strong brown clay loam that has brownish mottles.

This soil generally is strongly acid to slightly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of soils that are less than 60 inches deep over bedrock and some clayey soils. These included soils are commonly on narrow, short slopes. Also included are small areas of moderately well drained soils at the head of drains and along drainageways.

Most areas of this map unit are used as pasture. Most of the remaining areas are used for row crops. The Harpeth soil is suited to most locally grown row crops. Further erosion is a management concern if cultivated crops are grown. Winter cover crops and crop rotation reduce the runoff rate and help to control further erosion. This soil is well suited to pasture and hay. Proper management includes additions of lime and fertilizer, reduced stocking rates during periods of slow growth, and a good plan for harvesting and weed control.

A few areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is well suited to most urban uses. The slope is a limitation on sites for septic tank absorption fields. It can be overcome by installing the field lines on the contour. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing suitable base material for the construction of road surfaces.

The capability subclass is IIIe.

HoB2—Holston loam, 2 to 8 percent slopes, eroded

This soil is very deep and well drained. It is on gently sloping terraces along rivers and smaller streams. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown loam about 9 inches thick. The upper part of the subsoil, from a depth of 9 to 16 inches, is dark yellowish brown loam. The lower part, from a depth of 16 to 60 inches, is strong brown clay loam and sandy clay loam having brownish mottles.

This soil generally is strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of moderately well drained soils in slight depressions and at the edge of mapped areas on footslopes.

Most areas of this map unit are used as pasture. Most of the remaining areas are used for row crops. The Holston soil is well suited to row crops, small grains, pasture, and hay. Further erosion is a hazard if cultivated crops are grown. Crop residue management and contour farming help to control erosion. A high level of forage production is possible if pastures are managed for the maintenance of desired species.

A few areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is well suited to many urban uses.

The capability subclass is IIe.

HuB—Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded

This soil is very deep and well drained. It is on gently sloping terraces. Areas of this soil are dominantly long and narrow and are along small, permanent streams.

Typically, the surface layer is dark brown gravelly silt loam about 8 inches thick. The upper part of the subsoil, from a depth of 8 to 17 inches, is brown gravelly silt loam. The next part of the subsoil, from a depth of 17 to 36 inches, is dark yellowish brown gravelly silt loam. The lower part of the subsoil, from a depth of 36 to 50 inches, is dark yellowish brown gravelly silty clay loam that has brownish mottles. The underlying material, from a depth of 50 to 60 inches, is dark yellowish brown gravelly clay loam that has brownish mottles.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability and available water are moderate. The root zone is deep and is easily penetrated by roots.

This soil is subject to rare flooding for brief periods from December through April.

Included with this soil in mapping are soils that are subject to occasional flooding along drainageways. Also included are poorly drained soils at the edge of the mapped areas near steep slopes and soils that are less than 60 inches deep over bedrock near drainageways.

Most areas of this map unit are used for pasture or hay. A few areas are used for row crops. The Humphreys soil is well suited to row crops, small grains, hay, and pasture. Contour farming and crop residue management help to control erosion if the soil is cultivated. Good pasture management includes additions of lime and fertilizer, reduced stocking rates during periods of slow growth, and a good plan for weed control and harvesting.

This soil is well suited to trees. Black walnut and yellow-poplar are suitable trees to plant for commercial production. No significant management concerns affect woodland.

This soil is not suited to most urban uses because of the flooding.

The capability subclass is IIe.

InD2—Inman flaggy silty clay loam, 10 to 20 percent slopes, eroded

This soil is moderately deep and well drained. It is on hilly uplands, dominantly on dissected hilltops and hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown flaggy silty clay loam about 5 inches thick. The subsoil, from a depth of 5 to 24 inches, is yellowish brown and light olive brown flaggy silty clay that has brownish mottles. Below this, from a depth of 24 to 33 inches, are weathered limestone and seams of silty clay. Fractured bedrock strata are at a depth of 33 inches.

This soil is slightly acid or neutral. Permeability is moderately slow, and available water capacity is low. The root zone is moderately deep and is difficult for roots to penetrate.

Included with this soil in mapping are areas of soils that are less than 20 inches deep over bedrock. Commonly, these areas are at the upper part of the mapped area and on the steeper slopes.

Most areas of this map unit are used as pasture. Most of the remaining areas are woodland. The Inman soil is suited to pasture and hayland. Droughtiness, the restricted rooting depth, and the slope are limitations. Establishment of drought-resistant grasses, proper weed control, and controlled grazing help to keep the pasture and soil in satisfactory condition.

This soil is suited to woodland. Eastern white pine and black locust are suitable trees to plant. The hazard of further erosion, equipment limitations, and seedling mortality are management concerns. Poor tilth and droughtiness cause a high seedling mortality rate. Planting vigorous seedlings in early spring improves the survival rate. The hazard of further erosion can be reduced by maintaining cover on the forest floor. The safe operation of equipment is a management concern in the steeper areas.

This soil is poorly suited to most urban uses. The slope, the depth to rock, and the moderately slow permeability are limitations on sites for septic tank absorption fields. A specially designed system is needed to overcome these limitations. The slope is a limitation on sites for dwellings. Designing buildings to conform to the shape of the site helps to overcome this limitation. Low strength and the slope are limitations on sites for local roads and streets. Constructing roads on the contour and providing suitable base material help to overcome these limitations.

The capability subclass is VIs.

InE2—Inman flaggy silty clay loam, 20 to 35 percent slopes, eroded

This soil is moderately deep and well drained. It is on very hilly uplands, mostly on dissected hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown flaggy silty clay loam about 5 inches thick. The subsoil, from a depth of 5 to 24 inches, is yellowish brown and light olive brown flaggy silty clay that has brownish mottles. Below this, from a depth of 24 to 33 inches, are weathered limestone and seams of silty clay. Fractured bedrock strata are at a depth of 33 inches.

This soil is slightly acid or neutral. Permeability is moderately slow, and available water capacity is low. The root zone is moderately deep and is difficult for roots to penetrate.

Included with this soil in mapping are areas of soils that are less than 20 inches deep over bedrock. Commonly, these areas are at the upper part of the mapped areas and on the steeper slopes.

Most areas of this map unit are used as woodland. The remaining areas are pasture. The Inman soil is poorly suited to pasture and hay. Droughtiness, the restricted rooting depth, and the slope are limitations. The slope affects the maintenance of a suitable stand of grass. Establishment of drought-resistant grasses and controlled grazing during dry periods help to keep the pasture and soil in satisfactory condition.

This soil is poorly suited to woodland. Eastern white pine and black locust are suitable trees to plant. The hazard of erosion, equipment limitations, and seedling mortality are management concerns. Poor tilth and droughtiness cause a high seedling mortality rate. Planting vigorous seedlings in early spring improves the survival rate. The hazard of further erosion can be reduced by maintaining cover on the forest floor. The safe operation of equipment is a management concern in the steeper areas.

This soil is not suited to most urban uses because of the slope and the depth to rock. Special designs and engineering procedures that are compatible with the shape of the site help to overcome the slope.

The capability subclass is VIIs.

Ln—Lindell silt loam, occasionally flooded

This soil is very deep and moderately well drained. It is on nearly level flood plains. Slopes range from 0 to 2 percent.

Typically, the surface layer and subsurface layer are brown silt loam about 15 inches thick. The subsoil, from a depth of 15 to 32 inches, is dark yellowish brown loam and silt loam having brownish mottles. The underlying material, from a depth of 32 to 60 inches, is dark grayish brown loam that has brownish mottles.

This soil is moderately acid to neutral. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

This soil is subject to occasional flooding for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas of a moderately well drained soil that has a fragipan. Also included are small areas of soils that have a dark brown surface layer.

Most areas of this map unit are used for cultivated crops, but some areas are used as pasture and woodland. The Lindell soil is well suited to cultivated crops, hay, and pasture. The occasional flooding is not a serious hazard for farming.

Some areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is not suited to most urban uses because of the flooding.

The capability subclass is IIw.

Me—Melvin silt loam, frequently flooded

This soil is very deep and poorly drained. It is on nearly level flood plains along drainageways. Slopes range from 0 to 2 percent.

Typically, the surface layer is dark grayish brown silt loam about 6 inches thick. The subsoil, from a depth of 6 to 28 inches, is light brownish gray silt loam that has brownish mottles. The underlying material, from a depth of 28 to 60 inches, is light gray silt loam that has brownish mottles.

This soil is neutral to moderately acid. Permeability is moderate, and available water capacity is high. The root zone is very deep and can be penetrated by roots. Root growth is restricted by the seasonal high water table during prolonged wet periods.

This soil is subject to frequent flooding, mostly during winter and spring.

Included with this soil in mapping are small areas of soils that have a clayey subsoil. Also included, commonly around the outer edge of the mapped areas, are small areas of a moderately well drained soil.

Most areas of this map unit are wooded or idle. Most of the remaining areas are used as pasture. Unless drained, the Melvin soil is poorly suited to row crops. It is suited to pasture and hay if water-tolerant grasses are grown. Controlled grazing during wet periods helps maintain the soil and plants in satisfactory condition.

This soil is suited to woodland if water-tolerant trees, such as American sycamore and eastern cottonwood, are grown. Equipment limitations, the hazard of windthrow, and seedling mortality are management concerns caused by the seasonal wetness and the flooding. Restricting the use of equipment to dry periods reduces the extent of the damage to the soil. Planting vigorous seedlings on raised beds increases the survival rate. Managing for an uneven-aged stand minimizes the loss of trees caused by high winds.

This soil is not suited to most urban uses because of the flooding.

The capability subclass is IVw.

MmC2—Mimosa silt loam, 5 to 12 percent slopes, eroded

This soil is deep and well drained. It is on gently rolling uplands, dominantly on dissected hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is yellowish brown silty clay. The lower part, from a depth of 11 to 49 inches, is yellowish brown clay that has brownish mottles. The underlying material, from a depth of 49 to 53 inches, is yellowish brown clay that has brownish and grayish mottles. Limestone bedrock is at a depth of 53 inches.

This soil generally is very strongly acid to moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and available water capacity is moderate. The root zone is deep and is somewhat difficult for roots to penetrate in the lower part because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over bedrock and a few areas of soils that are more than 60 inches deep.

Most areas of this map unit are used as pasture. Most of the remaining areas are used for row crops or woodland. The Mimosa soil is poorly suited to row crops and small grains. Further erosion is a management concern if cultivated crops are grown. Conservation practices, such as long crop rotations that consist mainly of grasses and legumes, reduce the runoff rate and help to control further erosion. This soil is well suited to pasture and hay. Yields are commonly reduced during periods of low rainfall.

A few areas of this soil are wooded. This soil is well suited to woodland. Eastern white pine is a suitable tree to plant for commercial production. No significant management concerns affect woodland.

This soil is poorly suited to most urban uses. The slow permeability is a limitation on sites for septic tank absorption fields. A system that includes additional area in the absorption field helps to minimize this limitation. Low strength is a limitation on sites for local roads and streets. It can be minimized by replacing the upper part of the soil with suitable base material. The shrink-swell potential and the slope are limitations on sites for dwellings without basements. The depth to rock, the shrink-swell potential, and the slope are limitations on sites for dwellings with basements. Reinforcing foundations and walls and constructing buildings to fit the shape of the site help minimize the limitations caused by the shrink-swell potential and the slope.

The capability subclass is IVe.

MmD2—Mimosa silt loam, 12 to 20 percent slopes, eroded

This soil is deep and well drained. It is on dissected hillsides on hilly uplands. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is yellowish brown clay. The lower part, from a depth of 11 to 49 inches, is yellowish brown clay that has brownish mottles. The underlying material, from a depth of 49 to 53 inches, is yellowish brown silty clay that has brownish and grayish mottles. Limestone bedrock is at a depth of 53 inches.

This soil generally is very strongly acid to moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and available water capacity is moderate. The root zone is deep and is somewhat difficult for roots to penetrate in the lower part because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that have a loamy subsoil. Commonly, these areas are lower on the landscape than the Mimosa soil and are along drainageways. Also included are small areas of soils that are less than 40 inches deep over bedrock and a few small areas of Rock outcrop.

Most areas of this map unit are used as pasture. Most of the remaining areas are used as woodland. The Mimosa soil is suited to pasture and hay. The slope is a limitation affecting the use of equipment and the maintenance of a suitable stand of grass. Production is low during periods of low rainfall.

A few areas of this soil are wooded. This soil is suited to woodland. Eastern white pine is a suitable tree to plant for commercial production. The hazard of further erosion, equipment limitations, and seedling mortality are management concerns. The droughtiness causes a high seedling mortality rate. Planting vigorous seedlings in early spring improves the survival rate. The hazard of further erosion can be reduced by maintaining cover on the forest floor. The safe operation of equipment is a management concern in the steeper areas.

This soil is poorly suited to most urban uses. The slope and the slow permeability are limitations on sites for septic tank absorption fields. A specially designed system is needed to overcome these limitations. The slope is a limitation on sites for dwellings. Construction practices that are compatible with the shape of the site help overcome the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using suitable subgrade material help to overcome these limitations.

The capability subclass is VIe.

MmD3—Mimosa silty clay, 8 to 20 percent slopes, severely eroded

This soil is deep and well drained. It is on rolling uplands, mostly on hillsides. Erosion has removed nearly all of the original surface layer.

Typically, the surface layer is about 2 inches of brown silty clay that has brownish mottles. The subsoil, from a depth of 2 to 36 inches, is yellowish brown clay that has brownish mottles. The underlying material, from a depth of 36 to 47 inches, is mottled yellowish brown, pale brown, and gray clay. Limestone bedrock is at a depth of 47 inches.

This soil generally is very strongly acid to moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and available water capacity is moderate. The root zone is deep and is somewhat difficult for roots to penetrate in the lower part because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that have a loamy subsoil. These soils are along drainageways and are lower on the landscape than the Mimosa soils. Also included are small areas of soils that are less than 40 inches deep over bedrock and a few small areas that have a few outcrops of rock.

Most areas of this map unit are used as pasture or are idle. Some areas are reverting to woodland. The

Mimosa soil is poorly suited to pasture and hay. The poor tilth of the clayey surface layer, droughtiness, and the slope make establishing and maintaining pasture plants difficult.

Some areas of this soil are wooded. This soil is poorly suited to woodland. Eastern white pine and eastern redcedar are suitable trees to plant for commercial production. The hazard of further erosion, equipment limitations, and seedling mortality are management concerns. The poor tilth of the clayey surface layer and the droughtiness cause a high seedling mortality rate. Planting vigorous seedlings in early spring improves the survival rate. The hazard of further erosion can be reduced by maintaining cover on the forest floor. The safe operation of equipment is a management concern in the steeper areas.

This soil is poorly suited to most urban uses. The slope and the slow permeability are limitations on sites for septic tank absorption fields. Constructing a system that conforms to the shape of the site and includes additional footage in the absorption field lines helps to overcome these limitations. The slope is also a limitation on sites for dwellings. Construction practices that are compatible with the shape of the site help minimize this limitation. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using suitable subgrade material help to overcome these limitations.

The capability subclass is VIe.

MmE2—Mimosa silt loam, 20 to 35 percent slopes, eroded

This soil is deep and well drained. It is on very hilly uplands, dominantly on hillsides around knobs and narrow hilltops. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is yellowish brown clay. The lower part, from a depth of 11 to 49 inches, is yellowish brown clay that has brownish mottles. The underlying material, from a depth of 49 to 53 inches, is yellowish brown silty clay that has brownish and grayish mottles. Limestone bedrock is at a depth of 53 inches.

This soil generally is very strongly acid to moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and available water capacity is moderate. The root zone is deep and is somewhat difficult for roots to penetrate in the lower part because of the very firm subsoil.

Included with this soil in mapping are small areas of Rock outcrop, areas of a soil that is less than 20 inches deep over bedrock, and areas of a soil that is similar to the Mimosa soil but has a gravelly surface layer. These inclusions are commonly in bands around hillsides in the steeper areas.

Most areas of this map unit are used as pasture or woodland or are idle. The Mimosa soil is poorly suited to pasture and hay. The slope and droughtiness make establishing and maintaining pasture plants difficult.

A few areas of this soil are wooded. This soil is poorly suited to woodland. Eastern white pine and eastern redcedar are suitable trees to plant. The hazard of further erosion, equipment limitations, and seedling mortality are management concerns. Poor tilth and droughtiness cause a high seedling mortality rate. Planting vigorous seedlings in early spring improves the survival rate. The hazard of further erosion can be reduced by maintaining cover on the forest floor. The safe operation of equipment is a management concern in the steeper areas.

This soil is poorly suited to most urban uses. The slope and the slow permeability are limitations on sites for septic tank absorption fields. A specially designed system may be needed to overcome these limitations. The slope is also a limitation on sites for dwellings. Construction practices that are compatible with the shape of the site help minimize this limitation. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using suitable subgrade material help to overcome these limitations.

The capability subclass is VIIe.

MnC2—Mimosa silt loam, 5 to 20 percent slopes, eroded, very rocky

This soil is deep and well drained. It is on rolling and hilly uplands, mostly on hillsides. Erosion has removed part of the original surface layer. Rock outcrop and boulders of limestone cover about 1 to 3 percent of the surface. They extend several inches above the surface. Soil depth varies considerably within short distances.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is yellowish brown clay. The lower part, from a depth of 11 to 49 inches, is yellowish brown clay that has brownish mottles. The underlying material, from a depth of 49 to 53 inches, is yellowish brown silty clay that has brownish and grayish mottles. Limestone bedrock is at a depth of 53 inches.

This soil generally is very strongly acid to moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and available water capacity is moderate. The root zone is deep and is somewhat difficult for roots to penetrate in the lower part because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over bedrock. Commonly, these areas are near the Rock outcrop.

Nearly all of the areas of this map unit are used as pasture or are idle. The Mimosa soil is poorly suited to pasture and hay. Droughtiness, the Rock outcrop, and the slope make establishing and maintaining pasture plants difficult.

A very few areas of this soil are wooded. This soil is suited to eastern white pine. The Rock outcrop and boulders interfere with the operation of heavy equipment.

This soil is poorly suited to most urban uses. The slow permeability is a limitation on sites for septic tank absorption fields. Constructing a system that includes additional footage in the absorption field lines helps to overcome this limitation. Low strength is a limitation on sites for local roads and streets. It can be minimized by providing suitable base material for the construction of road surfaces. The depth to rock, the shrink-swell potential, and the slope are limitations on sites for dwellings. Reinforcing foundations and walls and constructing buildings to fit the shape of the site help overcome the shrink-swell potential and the slope.

The capability subclass is VIs.

MrE—Mimosa-Rock outcrop complex, 20 to 45 percent slopes

This map unit consists of the deep, well drained Mimosa soil and outcrops of limestone bedrock on vey hilly uplands. It is dominantly on hillsides. Erosion has removed part of the original surface layer. The areas of the Mimosa soil are too intricately intermingled with the areas of Rock outcrop to be mapped separately at the selected scale. This complex is about 60 percent Mimosa soil, 30 percent Rock outcrop, and 10 percent included soils.

Typically, the Mimosa soil has a surface layer of dark yellowish brown silt loam about 5 inches thick. The upper part of the subsoil, from a depth of 5 to 15 inches, is yellowish brown clay. The lower part, from a depth of 15 to 38 inches, is yellowish brown clay that has brownish and light brownish gray mottles in the lower part. The underlying material, from a depth of 38 to 45 inches, is mottled yellowish brown, strong brown, and brownish gray clay. Limestone bedrock is at a depth of 45 inches.

The Mimosa soil generally is very strongly acid to moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and available water capacity is moderate. The root zone is deep and is somewhat difficult for roots to penetrate in the lower part because of the very firm subsoil.

Typically, the Rock outcrop is hard limestone bedrock. It is commonly in bands along the contour around hillsides. These bands may be up to 20 feet wide and typically crop out a few inches to 4 feet above the surface. Some outcrops extend up to 10 feet above the surface of the soil as bedrock escarpments near the top of the slope within the mapped area. Commonly, below the bedrock escarpments are flagstones and boulders of limestone ranging in size from 1 foot to more than 15 feet across.

Included in mapping are small areas that have more than 50 percent Rock outcrop. Also included are small areas of soils that are less than 40 inches deep over bedrock, commonly near the Rock outcrop, and areas of severely eroded soils.

Most areas of this map unit are used as pasture or woodland. This map unit is poorly suited to pasture and hay. The slope and Rock outcrop make establishing and maintaining pasture difficult.

Some areas of this map unit are used as woodland. This map unit is suited to the production of eastern white pine and eastern redcedar. The hazard of erosion and equipment limitations are management concerns. The hazard of erosion can be reduced by maintaining cover on the forest floor. The use of tracked equipment in the steeper areas helps overcome the safety hazard.

This map unit is not suited to most urban uses because of the slope, the slow permeability, and the Rock outcrop. Special designs and engineering procedures that are compatible with the shape of the land help to overcome the slope.

The capability subclass is VIIs in areas of the Mimosa soil.

NeB2—Nesbitt silt loam, 2 to 6 percent slopes, eroded

This soil is very deep and moderately well drained. It is on gently sloping uplands, dominantly on broad hilltops. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is brown silt loam that has brownish mottles. The next part of the subsoil, from a depth of 11 to 22 inches, is yellowish brown silty clay loam that has brownish mottles. The next part of the subsoil, from a depth of 22 to 32 inches, is yellowish brown silty clay loam that has brownish and grayish mottles and is brittle in part of the volume. The lower part of the subsoil, from a depth of 32 to 60 inches, is yellowish red silty clay loam that has brownish and grayish mottles and is brittle in part of the volume.

This soil generally is moderately acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of a moderately well drained soil that has a fragipan, commonly in slight depressions in the upper part of the mapped areas.

Many areas of this map unit are wooded. The remaining areas are used for pasture or row crops. The Nesbitt soil is well suited to row crops, small grains, pasture, and hay. Crop residue management and contour farming help to control further erosion. A high level of forage production is possible if pastures are managed for the maintenance of desired species.

Several areas of this soil are wooded. This soil is well suited to woodland. Eastern white pine and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is suited to some urban uses. Wetness is a limitation on sites for septic tank absorption fields. A specially designed system may be necessary to overcome this limitation. The wetness is also a limitation on sites for dwellings with or without basements. Installing a surface and subsurface drainage system and properly sealing basement walls help to overcome this limitation. Low strength is a limitation on sites for local roads and streets. It can be overcome by replacing the upper part of the soil with suitable base material.

The capability subclass is IIe.

NeC2—Nesbitt silt loam, 6 to 12 percent slopes, eroded

This soil is very deep and moderately well drained. It is on gently rolling uplands, dominantly on hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The upper part of the subsoil, from a depth of 7 to 11 inches, is brown silt loam that has brownish mottles. The next part of the subsoil, from a depth of 11 to 22 inches, is yellowish brown silty clay loam that has brownish mottles. The next part of the subsoil, from a depth of 22 to 32 inches, is yellowish brown silty clay loam that has brownish and grayish mottles and is brittle in part of the volume. The lower part of the subsoil, from a depth of 32 to 60 inches, is yellowish red silty clay loam that has brownish and grayish mottles and is brittle in part of the volume.

This soil generally is moderately acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is very deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of a moderately well drained soil that has a fragipan, commonly in slight depressions in the upper part of the mapped areas.

Many areas of this map unit are used as pasture. Most of the remaining areas are used for row crops. The Nesbitt soil is well suited to pasture, hay, and small grains and is suited to row crops. Stripcropping and terraces reduce the runoff rate and help to control further erosion in cultivated areas. Good pasture management includes additions of lime and fertilizer, adequate weed control, and reduced stocking rates during periods of slow growth.

Several areas of this soil are wooded. This soil is well suited to woodland. Eastern white pine and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is suited to some urban uses. Wetness is a limitation on sites for septic tank absorption fields. A specially designed system may be necessary to overcome this limitation. The wetness is also a limitation on sites for dwellings with or without basements. Installing a surface and subsurface drainage system and properly sealing basement walls help to overcome this limitation. Low strength is a limitation on sites for local roads and streets. It can be overcome by replacing the upper part of the soil with suitable base material.

The capability subclass is IIIe.

Oc—Ocana gravelly silt loam, occasionally flooded

This soil is very deep and well drained. It is on nearly level flood plains along drainageways. Slopes range from 0 to 2 percent.

Typically the surface layer is brown gravelly silt loam about 8 inches thick. Below this, from a depth of 8 to 38 inches, is dark yellowish brown gravelly silt loam. The underlying material, from a depth of 38 to 60 inches, is brown very gravelly silt loam that has brownish mottles.

This soil is moderately acid to neutral. Permeability is moderately rapid, and available water capacity is moderate. The root zone is very deep and is easily penetrated by roots.

This soil is subject to occasional flooding for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas of soils that contain only a few pebbles. Also included are small areas of soils that are less than 40 inches deep over bedrock.

Most areas of this map unit are used as pasture. Most of the remaining areas are used as woodland. The Ocana soil is poorly suited to row crops and small grains because the long, narrow shape of the areas limits the use of equipment. It is suited to pasture and hay. Production is low during dry periods because the soil is somewhat droughty. Good pasture management includes additions of lime and fertilizer, reduced stocking rates during periods of slow growth, and a good plan for weed control and harvesting. The occasional flooding is not a serious hazard for farming.

Many areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar and black walnut are suitable trees to plant. No significant management concerns affect woodland.

This soil is not suited to most urban uses because of the flooding.

The capability subclass is IIs.

RtC—Rock outcrop-Talbott complex, 3 to 15 percent slopes

This map unit consists of outcrops of limestone and areas of the moderately deep, well drained Talbott soil. It is on undulating to rolling uplands, mostly on hillsides. The areas of Rock outcrop and Talbott soil are so intricately intermingled that they could not be mapped separately at the selected scale. This complex is about 60 percent Rock outcrop, 25 percent Talbott soil, and 15 percent included soils.

The Rock outcrop consists of hard limestone bedrock. In most areas, it extends 1 to 3 feet above the surface.

Typically, the surface layer and subsurface layer of the Talbott soil are dark brown silt loam about 5 inches thick. The upper part of the subsoil, from a depth of 5 to 9 inches, is dark brown silty clay loam. The next part of the subsoil, from a depth of 9 to 14 inches, is yellowish red clay that has brownish mottles. The lower part of the subsoil, from a depth of 14 to 29 inches, is red clay. Limestone bedrock is at a depth of 29 inches.

The Talbott soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately slow, and available water capacity is low. The root zone varies because of depth to bedrock and boulders in the subsoil.

Included in mapping are very small areas of soils that are less than 20 inches or more than 40 inches deep over bedrock.

Most areas of this map unit are used as woodland. The remaining areas are idle or are used as pasture. This map unit is poorly suited to pasture and hay because of the Rock outcrop, which extends up to 3 feet above the surface.

This map unit is not suited to commercial woodland. Low production is a major limitation. Eastern redcedar can be grown for local use. The Rock outcrop interferes with equipment.

This map unit is poorly suited to most urban uses. The Rock outcrop, the depth to rock, the moderately slow permeability, the shrink-swell potential, and low strength are limitations. They are difficult to overcome.

The capability subclass is VIIs in areas of the Talbott soil.

SgD2—Sugargrove gravelly silt loam, 12 to 20 percent slopes, eroded

This soil is deep and well drained. It is on hilly uplands, commonly on narrow, winding shoulder slopes. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown gravelly silt loam about 6 inches thick. The upper part of the subsoil, from a depth of 6 to 12 inches, is yellowish brown gravelly silt loam. The lower part, from a depth of 12 to 32 inches, is yellowish brown gravelly silty clay loam that has brownish mottles in the lower part. The substratum, from a depth of 32 to 41 inches, is yellowish brown very gravelly silty clay that has brownish and reddish mottles. Below this, from a depth of 41 to 49 inches, is level-bedded weathered limestone. Hard bedrock is at a depth of 49 inches.

This soil generally is very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate or moderately rapid, and available water capacity is moderate. The root zone is moderately deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over bedrock and that are steeper than the Sugargrove soil. These included soils are near the edge of the mapped areas. Also included are areas that have a few stones on the surface and have more than 35 percent chert in the upper part of the soil.

Many areas of this map unit are used as pasture. Most of the remaining areas are used as woodland. A few areas are used for row crops. The Sugargrove soil is poorly suited to cultivated crops because of the hazard of erosion. Also, it is somewhat droughty. If cultivated crops are grown, crop rotations should be long term and should consist mainly of grasses and legumes. This soil is suited to pasture and hay, but yields are low during dry periods. Establishment of drought-resistant grasses, proper weed control, and controlled grazing help to keep the pasture and soil in satisfactory condition.

Many areas of this soil are wooded. This soil is suited to woodland. Eastern white pine is a suitable tree to plant for commercial production. No significant management concerns affect woodland.

This soil is poorly suited to most urban uses because of the slope. Special designs and engineering procedures that are compatible with the shape of the site help to overcome this limitation.

The capability subclass is IVe.

SUF—Sulphura channery silt loam, 25 to 65 percent slopes

This soil is moderately deep and somewhat excessively drained. It is on steep uplands, dominantly on dissected hillsides.

Typically, the surface layer is dark brown channery silt loam about 3 inches thick. The subsoil, from a depth of 3 to 36 inches, is yellowish brown very channery silt loam. Limestone bedrock is at a depth of 36 inches.

This soil is strongly acid or moderately acid throughout. Permeability is moderately rapid, and available water capacity is low. The root zone is moderately deep and is somewhat restricted by rock fragments.

Included with this soil in mapping are small areas of soils that are similar to the Sulphura soil but are less than 20 inches deep over bedrock. These soils are commonly on the upper part of steep hillsides and on slopes near drainageways. Also included are soils that are similar to the Sulphura soil but are slightly more than 40 inches deep over bedrock. They are commonly on footslopes, on benches, and in coves. The upper part of these soils formed in colluvium from the higher areas. Also included are a few very small areas that have very steep slopes and exposed bedrock.

A small acreage of this unit is used as pasture. The Sulphura soil is very poorly suited to pasture because of the slope and droughtiness.

Most areas of this soil are wooded. This soil is poorly suited to commercial production of timber. Low production is a major limitation. Eastern redcedar can be grown for some uses, such as fence posts. The hazard of erosion, equipment limitations, seedling mortality, and the windthrow hazard are management concerns. They are difficult to overcome.

This soil is not suited to most urban uses because of the slope and the depth to rock. Special designs and engineering procedures that are compatible with the shape of the site help to overcome the slope.

The capability subclass is VIIs.

TbC—Talbott silt loam, 3 to 10 percent slopes, rocky

This soil is moderately deep and well drained. It is on undulating to rolling uplands. It has Rock outcrop and boulders of limestone on about 1 to 8 percent of the surface. The Rock outcrop and boulders extend up to more than 12 inches above the surface. Soil depth varies over short distances because of the Rock outcrop and boulders in the subsoil.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil, from a depth of 6 to 28 inches, is yellowish red and red clay that has brownish mottles. Limestone bedrock is at a depth of 28 inches.

This soil generally is strongly acid or moderately acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately slow, and available water capacity is low. The root zone is moderately deep and is somewhat difficult for roots to penetrate in the lower part because of the very firm subsoil.

Included with this soil in mapping are areas of soils that are less than 20 inches deep over bedrock, commonly in the rockier areas. Also included are scattered very small areas that have more than 10 percent Rock outcrop, a soil that is more than 40 inches deep over bedrock, and a soil that is similar to the Talbott soil but has a yellowish brown or strong brown subsoil.

Most areas of this map unit are used as pasture. Some areas are idle and reverting to woodland. The Talbott soil is poorly suited to row crops and hay because of the rocks. Also, it is droughty during periods of low rainfall. It is suited to pasture, but the Rock outcrop causes equipment limitations that hinder the establishment and maintenance of pasture plants.

A few areas of this soil are wooded. This soil is poorly suited to woodland because of low production. The Rock outcrop interferes with the operation of heavy equipment. Eastern redcedar can be grown for some uses, such as fence posts.

This soil is poorly suited to most urban uses. The Rock outcrop, the depth to rock, the moderately slow permeability, the shrink-swell potential, and low strength are limitations. They are difficult to overcome.

The capability subclass is IVs.

UA—Udarents, loamy, nearly level

This map unit consists of areas where the surface layer and the upper part of the subsoil were graded and stockpiled and then used as fill material after the lower part of the subsoil was excavated. The soil material that was removed was used for road construction. Slopes range from 0 to 3 percent.

Typically, the surface layer is brown silt loam about 12 inches thick. The subsurface layer, from a depth of 12 to 22 inches, is mottled brownish silty clay loam. Below this, from a depth of 22 to 60 inches, is strong brown gravelly sandy clay loam.

This map unit is strongly acid to slightly acid. Permeability and available water capacity are variable.

All areas of this map unit are used as pasture. Suitability for various uses ranges from not suited to well suited. This map unit is not assigned to interpretative groups. Onsite investigation is needed.

UD—Udorthents, gravelly, undulating

This map unit consists of sites where soil material was excavated for use in construction projects. Slopes range from 2 to 8 percent.

The texture of the excavated material ranges from silt loam to clay, and the size of fragments ranges from gravel to boulders. The thickness of cuts and fills is highly variable. Soil reaction, permeability, and available water capacity also are variable.

Included in mapping are a few small areas of moderately deep or deep undisturbed soils, generally near the edge of the mapped areas. Also included are a few areas of soils that have a slope of more than 8 percent.

Suitability for various uses ranges from not suited to suited. This map unit is not assigned to interpretative groups.

WaC2—Waynesboro clay loam, 5 to 12 percent slopes, eroded

This soil is very deep and well drained. It is on gently rolling uplands, dominantly on hilltops and hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown clay loam about 5 inches thick. The upper part of the subsoil, from a depth of 5 to 15 inches, is yellowish red clay loam that has brownish mottles. The lower part, from a depth of 15 to 60 inches, is red clay that has brownish mottles.

This soil generally is very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of extremely gravelly soils and small areas of well drained loamy soils in depressions and along drainageways.

Many areas of this map unit are used for pasture or row crops. The remaining areas are woodland. The Waynesboro soil is suited to row crops, but the hazard of further erosion is high. Winter cover crops and contour farming reduce the runoff rate and help to control erosion (fig. 7). This soil is well suited to hay and pasture. Good pasture management includes additions of lime and fertilizer, reduced stocking rates during periods of slow growth, and a good plan for weed control and harvesting.

A few areas of this soil are wooded. This soil is well suited to woodland. Eastern white pine is a suitable tree to plant. No significant management concerns affect woodland.

This soil is well suited to many urban uses.

The capability subclass is IIIe.

WaD2—Waynesboro clay loam, 12 to 20 percent slopes, eroded

This soil is very deep and well drained. It is on hilly uplands, dominantly on hillsides. Erosion has removed part of the original surface layer.

Typically, the surface layer is brown clay loam about 5 inches thick. The upper part of the subsoil, from a depth of 5 to 15 inches, is yellowish red clay loam. The next part of the subsoil, from a depth of 15 to 36 inches, is yellowish red clay that has brownish mottles. The lower part of the subsoil, from a depth of 36 to 60 inches, is red clay that has brownish mottles.

This soil generally is very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and available water capacity is high. The root zone is deep and is easily penetrated by roots.

Included with this soil in mapping are small areas of extremely gravelly soils and small areas of well drained, loamy soils in depressions and along drainageways.

Many areas of this map unit are used as pasture. The remaining areas are used as woodland or are idle. The Waynesboro soil is poorly suited to row crops because of the hazard of further erosion. If cultivated crops are grown, crop rotations should be long term

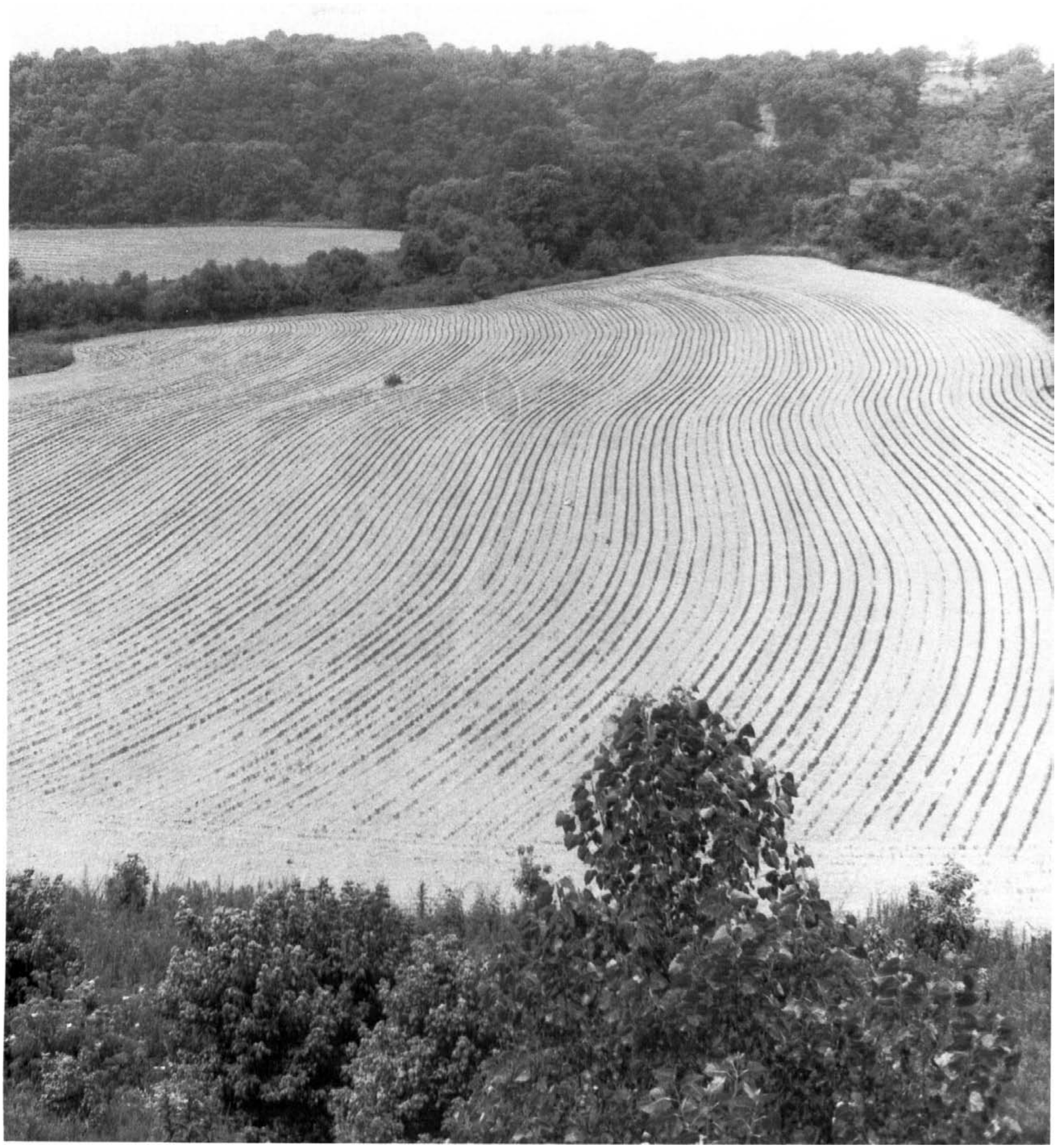

Figure 7.—Contour farming, which helps to control erosion, in an area of Waynesboro clay loam, 5 to 12 percent slopes, eroded.

and should consist mainly of grasses and legumes. This soil is well suited to pasture and hay. Reduced stocking rates during periods of slow growth and timely weed control help maintain an adequate stand of grass.

Several areas of this soil are wooded. This soil is well suited to woodland. Eastern white pine is a suitable tree to plant. No significant management concerns affect woodland.

This soil is suited to many urban uses. The slope is a limitation on sites for septic tank absorption fields. Designing systems to conform to the shape of the site helps overcome this limitation. The construction of dwellings should include engineering practices that help overcome the slope. The slope is also a limitation on sites for local roads and streets. Designing roads on the contour helps to overcome this limitation.

The capability subclass is IVe.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. 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, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, 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. It 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. The slope ranges mainly from 0 to 5 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

The map units in the survey area that are considered prime farmland are listed in at the end of this section. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

About 14,553 acres in Trousdale County meets the soil requirements for prime farmland. Areas of this land are scattered throughout the county, but most are along Old Hickory Lake, Goose Creek, and Little Goose Creek in the Harpeth-Arrington and Talbott-Bradyville general soil map units.

The map units that meet the requirements for prime farmland are:

AmB	Armour silt loam, 2 to 5 percent slopes
Ar	Arrington silt loam, occasionally flooded
BrB2	Bradyville silt loam, 2 to 5 percent slopes, eroded
ByB	Byler silt loam, 1 to 4 percent slopes
CpB	Capshaw silt loam, 2 to 6 percent slopes
Eg	Egam silt loam, occasionally flooded
HhB2	Harpeth silt loam, 2 to 5 percent slopes, eroded
HoB2	Holston loam, 2 to 8 percent slopes, eroded
HuB	Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded
Ln	Lindell silt loam, occasionally flooded
NeB2	Nesbitt silt loam, 2 to 6 percent slopes, eroded
Oc	Ocana gravelly silt loam, occasionally flooded

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 rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

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

Contractors can use this survey 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, campgrounds, playgrounds, and trees.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed for each soil, 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.

In 1985, Trousdale County had about 5,145 acres of cropland and 37,972 acres of pasture. Soybeans, corn, and tobacco were the common row crops. Most pastures consisted of a mixture of tall fescue and white clover.

Although many of the soils in the county are suited to the crops that are commonly grown in the area, some are not. For example, soils that have a subsurface layer of heavy clay are poorly suited to many commercial vegetable crops. The Mimosa soils are an example. Most of the soils in Trousdale County require lime, fertilizer, or both. The amount of lime and fertilizer needed depends on the acidity of the soil, the amount of plant nutrients in the soil, the needs of the crop, and the desired yield. The Tennessee Agricultural Extension Service operates a soil testing laboratory as a service to landowners and operators who want a laboratory analysis of their soils. The analysis can be used to make recommendations regarding the appropriate kinds and amounts of fertilizer and lime.

Most of the soils in Trousdale County have a low content of organic matter. Increasing the content of organic matter in a soil increases the rate of water infiltration and the available water capacity, improves soil structure, minimizes surface crusting, helps to control erosion, and promotes good tilth. In Trousdale County, building up a high content of organic matter is not feasible over the long term because of existing climatic conditions. It is important, however, to return organic material to the soil by adding farm manure, leaving plant residue on the surface, growing sod crops, and incorporating cover crops and green manure crops into the soil.

Gently sloping or steeper soils that are cultivated are subject to erosion. Erosion reduces the productivity of the soils. If the surface layer is lost through erosion, most of the available plant nutrients and the organic matter are also lost. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as the Mimosa soils. Controlling erosion on farmland minimizes the pollution of streams by sediment, nutrients, and pesticides and improves water quality.

A cropping system that maintains a plant cover for extended periods helps to control erosion and preserves the productive capacity of the soil. Including grasses and legumes in the cropping system also helps to control erosion and improves tilth for the crops that follow in the rotation. The legumes also increase the nitrogen levels in the soil.

Reduced tillage, terraces, diversions, contour stripcropping, and a cropping system that rotates grasses, legumes, or close-growing crops with row crops help to control erosion on cropland. Terraces and diversions help to control erosion by reducing the length of the slope and conducting runoff to stabilized outlets. Terraces and diversions are most practical on deep, well drained soils that have a uniform, regular slope. Examples are Armour and Harpeth soils. No-till planting, minimum tillage, and contour farming are also most effective on soils that have a relatively smooth, uniform slope.

Pasture effectively helps to control erosion on most soils. Good pasture management includes using adapted plants in the pasture mixture, applying lime and fertilizer, controlling weeds, and regulating grazing. Grazing is controlled by reducing the number of animals per acre or rotating the livestock from one pasture to another. Controlled grazing allows pasture plants to regrow and reduces the extent of encroachment by undesirable species.

A single management practice or a management system that consists of a combination of practices can be equally effective on a soil. The local representative of the Natural Resources Conservation Service can provide assistance in planning an effective combination of practices.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. 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 each map unit 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 are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the 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 *(5)*. 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 rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

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

Class I soils have few limitations that restrict their use.

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

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

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

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

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

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

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

Woodland Management and Productivity

Joesph H. Paugh, forester, Natural Resources Conservation Service, helped prepare this section.

Most of the area that is now Trousdale County was once covered by deciduous forest. As the area was settled, the forest was cut and most areas that could be cultivated were cleared. Many of the areas that are now wooded are too hilly or too rocky to be farmed. If the woodland is properly managed, many of the soils in these areas produce high-quality trees. Woodland makes up about 24,000 acres in the county. Almost all of the woodland in the county is privately owned. The largest areas of woodland are in the Dellrose-Mimosa and Sulphura-Dellrose general soil map units.

The most common trees are mixed hardwoods, mainly upland oaks. Much of the existing commercial woodland would benefit by thinning out undesirable species, providing protection from grazing and fire, and controlling disease and insects. The Natural Resources Conservation Service, the Tennessee State Forestry Division, and the Cooperative Extension Service can help to determine specific woodland management.

Table 6 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed.

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

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

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. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic feet per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Suggested trees to plant are those that are suitable for commercial wood production.

Recreation

Gerald L. Montgomery, biologist, Natural Resources Conservation Service, helped prepare this section.

Trousdale County has many areas of scenic, geologic, and historic interest. These areas are used for picnicking, camping, hiking, boating, fishing, hunting, sightseeing, and other recreational activities. Old Hickory Lake and the surrounding vicinity are the major recreational areas in the county. Numerous areas owned by Federal, State, and local government agencies are also available for public use.

Due to the varied topography within the county, no single soil is used dominantly for recreational purposes. Many soils in the county are well suited to the development of recreational facilities.

The soils of the survey area are rated in table 7 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

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

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

Wildlife Habitat

Gerald L. Montgomery, biologist, Natural Resources Conservation Service, helped prepare this section.

Trousdale County has a large and varied population of fish and wildlife. Common wildlife species in areas of woodland include whitetail deer, gray squirrel, woodpeckers, gray fox, and raccoon. Bobwhite quail, cottontail rabbit, mourning dove, and many types of songbirds are attracted to openland areas. Muskrat and mink are attracted to streams and wetlands. Old Hickory Lake supports various species of fish, including bass, crappie, and walleye. The lake also provides resting and feeding areas for migratory waterfowl in fall and spring.

The deer population in the county is good and is on the increase. Small game populations are good and are on the increase where food and cover are available. The raccoon population is fair and stable. The gray fox population is increasing, while the red fox population is decreasing. Coyotes are moving into the county, and their population is increasing rapidly. Old Hickory Lake supports a permanent population of Canadian geese.

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

In table 8, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

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

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

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

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

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

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountain mahogany, bitterbrush, snowberry, and big sagebrush.

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

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

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

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data in the "Soil Properties" section.

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

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

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

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

Building Site Development

Table 9 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

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

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

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

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

Sanitary Facilities

Table 10 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

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

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

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

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

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

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

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

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

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

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

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

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

Construction Materials

Table 11 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

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

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

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

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

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

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

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

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

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

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

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

Water Management

Table 12 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

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

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

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

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth 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.

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

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

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

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

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

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

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

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

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

Engineering Index Properties

Table 13 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(3)* and the system adopted by the American Association of State Highway and Transportation Officials *(2)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 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.

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

Physical and Chemical Properties

Tables 14 and 15 show estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, 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-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems 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 major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility is the linear expression of the volume difference of natural soil fabric at 1/3- or 1/10-bar water content and oven dryness. The volume change is reported as percent change for the whole soil. Linear extensibility is related to shrink-swell potential, which is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

Erosion factors Kw and *Kf* quantify the susceptibility of soil detachment by water. These erodibility factors predict the long-term average soil loss that results from sheet and rill erosion under various alternative combinations of crop systems and conservation techniques. Factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. Factor Kf indicates the erodibility of only the fine-earth fraction, which is the material that is less than 2.0 millimeters in diameter.

Kw factors obtained experimentally range from 0.02 to 0.69. For the purpose of soil interpretations, the factors have been grouped into 14 classes. The classes are identified by a representative class value as follows: .02, .05, .10, .15, .17, .20, .24, .28, .32, .37, .43, .49, .55, and .64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Soil erodibility factors Kw and Kf are used to predict soil loss by erosion. They are used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE). Soil properties that influence erosion caused by rainfall are those that affect infiltration rate, movement of water through the soil, and water storage capacity and those that affect dispersion, detachability, abrasion, and mobility of soil particles due to rainfall and runoff. Some of the most important properties are texture, organic matter content, size and stability of structural aggregates in the exposed layer, permeability of the subsoil, and depth to a slowly permeable layer.

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.

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

Cation-exchange capacity is 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. Cation-exchange capacity is a measure of the ability of a soil to retain cations, some of which are plant nutrients. Soils that have low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils that have high cation-exchange capacity. Soils that have high cation-exchange capacity have the potential to retain cations, which reduces the risk of pollution of ground water.

Effective cation-exchange capacity is the sum of bases extractable by ammonium acetate plus the aluminum extractable by potassium chloride. It is used for soils that have pH less than 5.5 and that are low in soluble salts.

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

Soil and Water Features

Tables 16 and 17 give estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* limits plant growth by restricting the root zone and the available water capacity. It also impedes or restricts the movement of water vertically through the soil profile and has a direct impact on the quality and quantity of ground water and surface water. Restrictive layers include bedrock, cemented layers, dense layers, frozen layers, abrupt or stratified layers, layers of strongly contrasting textures, and dispersed layers. The hardness and thickness of the restrictive layer have a significant impact on the ease of mechanical excavation.

The *depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

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

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

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

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.

Water table is a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are the upper limit and the lower limit of the seasonal high water table. A water table that is seasonally high for less than 1 month is not indicated in the table.

The *upper limit* and *lower limit* indicate the normal range in thickness of the saturated zone. Depth is given to the nearest half foot. The upper limit indicates the highest water level. "More than 5.0" in the column showing the lower limit indicates that the water table is below a depth of 5 feet or that it is within a depth of 5 feet for less than a month.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Table 17 gives the estimated frequency and duration of flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that there is no reasonable possibility of flooding (the chance of flooding is nearly 0 percent in any year, or flooding is probable less than 1 time in 500 years). *Very rare* means that flooding is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year, or flooding is probable less than 1 time in 100 years but at least 1 time in 500 years). *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year, or flooding is probable up to 5 times in 100 years). *Occasional* means that flooding is expected infrequently under usual weather conditions (the chance of flooding is 5 to 50 percent in any year, or flooding is probable 5 to 50 times in 100 years). *Frequent* means that flooding is likely to occur often under usual weather conditions (the chance of flooding is more than 50 percent in any year but less than 50 percent in all months in any year, or flooding is probable more than 50 times in 100 years). *Very frequent* means that flooding is likely to occur very often under usual weather conditions (the chance of flooding is more than 50 percent in all months of any year). Duration is expressed as *extremely brief* if 0.1 to 4.0 hours, *very brief* if 4 to 48 hours, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days.

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 *(6, 7)*. 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. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is 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, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, 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.

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" *(8)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(6)* and in "Keys to Soil Taxonomy" *(7)*. 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.

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

Armour Series

The Armour series consists of very deep, well drained soils that formed in alluvium on terraces throughout the county. Slopes range from 2 to 5 percent.

Typical pedon of Armour silt loam, 2 to 5 percent slopes; north of Hartsville, 1.8 miles on Middle Fork Road from its intersection with Highway 10, about 300 feet east of Middle Fork Road:

Ap—0 to 7 inches; dark yellowish brown (10YR 3/4) silt loam; weak medium granular structure; friable;

many very fine and fine roots; common very fine and fine pores; few small black concretions; moderately acid; abrupt smooth boundary.

AB—7 to 11 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; many very fine and fine roots; common very fine and fine pores; few small black concretions; moderately acid; clear smooth boundary.

Bt1—11 to 26 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; common very fine and fine roots; common very fine and fine pores; few faint clay films on faces of peds; common small black concretions; moderately acid; gradual smooth boundary.

Bt2—26 to 60 inches; strong brown (7.5YR 4/6) silty clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; few fine and very fine roots; common very fine and fine pores; common faint clay films on faces of peds; common small black concretions; moderately acid.

Depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 10 percent in the A and B horizons.

The A horizon and AB horizon, where present, have hue of 10YR or 7.5YR and value and chroma of 3 or 4. The texture is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In some pedons it has brownish mottles. It is silt loam or silty clay loam.

Arrington Series

The Arrington series consists of very deep, well drained soils that formed in alluvium on flood plains in the Nashville Basin. Slopes range from 0 to 2 percent.

Typical pedon of Arrington silt loam, occasionally flooded; south of Hartsville, 1.3 miles on Lock Six Road from its intersection with Highway 25 to a farm road, 3,800 feet west on the farm road, 1,400 west of the farm road, 100 feet east of Goose Creek:

Ap—0 to 10 inches; dark brown (10YR 3/3) silt loam; weak fine and medium granular structure; friable; few fine and many very fine roots; common very fine, fine, and medium and few coarse pores; slightly acid; abrupt smooth boundary.

A—10 to 31 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine and medium granular structure; friable; few fine and common very fine roots; common very fine, fine, and medium pores; few very fine black concretions; slightly acid; clear smooth boundary.

Bw—31 to 50 inches; dark brown (10YR 3/3) silty clay loam; weak medium subangular blocky structure parting to weak fine and medium granular; friable; few fine and common very fine roots; common fine and very fine pores; few very fine black concretions; about 2 percent rounded fragments of chert 1/8 to 1/2 inch across; slightly acid; clear smooth boundary.

C—50 to 60 inches; dark grayish brown (10YR 4/2) silty clay loam; few fine faint grayish brown mottles; weak coarse granular structure; friable; few very fine roots; few fine and very fine pores; common fine black and brown concretions; about 3 percent rounded fragments of chert 1/8 to 1/2 inch across; neutral.

Depth to bedrock is more than 60 inches. The content of chert fragments ranges from 0 to 3 percent throughout the profile.

The A horizon has hue of 10YR, value of 3, and chroma of 2 or 3. It is silt loam.

The Bw horizon has hue of 10YR and value and chroma of 3 or 4. It is silt loam or silty clay loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It is silt loam or silty clay loam.

Ashwood Series

The Ashwood series consists of moderately deep, well drained soils that formed in residuum from limestone on uplands. These soils are throughout the county. They are in the Nashville Basin. Slopes range from 5 to 70 percent.

Typical pedon of Ashwood silty clay loam, in an area of Barfield-Rock outcrop-Ashwood complex, 5 to 20 percent slopes; west of Hartsville, 0.6 mile south on College Road from its intersection with Highway 25, about 300 feet east of College Road and 200 feet north of a pond:

A—0 to 5 inches; very dark grayish brown (10YR 3/2) silty clay loam; strong medium granular structure; friable; many fine and medium roots; common fine pores; neutral; clear smooth boundary.

Bt1—5 to 16 inches; very dark grayish brown (10YR 3/2) clay; strong medium subangular blocky structure; firm; common fine roots; few fine pores; common distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—16 to 28 inches; yellowish brown (10YR 5/6) clay; moderate medium angular blocky structure; very firm; few fine roots; common distinct clay films on faces of peds; few limestone flagstones; slightly alkaline; abrupt wavy boundary.

R—28 inches; hard limestone bedrock.

Depth to bedrock ranges from 20 to 40 inches.

The A horizon has hue of 10YR, value of 3, and chroma of 2 or 3. It is silty clay loam or silty clay.

The upper part of the Bt horizon has hue of 10YR, value of 3, and chroma of 2 or 3. The lower part of the Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. The Bt horizon is silty clay or clay.

Barfield Series

The Barfield series consists of shallow, well drained soils that formed in residuum from limestone on uplands in the Nashville Basin. Slopes range from 5 to 70 percent.

Typical pedon of Barfield silty clay loam, in an area of Barfield-Rock outcrop-Ashwood complex, 5 to 20 percent slopes; south of Hartsville on Highway 141 to its intersection with Cedar Bluff Road, 3.1 miles east on Cedar Bluff Road, 200 feet west of the road:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak medium granular structure; friable; common very fine and few fine and medium roots; few very fine and fine pores; about 2 percent limestone flagstones; neutral; clear smooth boundary.

Bw—6 to 13 inches; dark brown (10YR 3/3) clay; moderate medium subangular blocky structure; friable; common very fine and few fine and medium roots; few very fine and fine pores; very few fine black concretions; about 4 percent limestone flagstones; neutral; gradual smooth boundary.

BC—13 to 18 inches; brown (10YR 4/3) clay; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few very fine and fine roots; few very fine pores; few fine black concretions; about 10 percent limestone flagstones; neutral; abrupt wavy boundary.

R—18 inches; limestone bedrock.

Depth to limestone bedrock ranges from 8 to 20 inches. The content of channers and flagstones of limestone ranges from 0 to 15 percent in the A horizon and from 3 to 25 percent in the B and BC horizons.

The Ap horizon has hue of 10YR, value of 3, and chroma of 2 or 3. It is silty clay loam.

The Bw horizon has hue of 10YR, value of 3, and chroma of 2 or 3. In some pedons it has brownish mottles. It is clay or silty clay.

The BC horizon, where present, has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. In most pedons it has few or common brownish mottles. It is clay or silty clay.

Bradyville Series

The Bradyville series consists of deep, well drained soils that formed in a thin mantle of old alluvium or mixed loess and alluvium and in the underlying clayey residuum weathered from limestone. These soils are on uplands in the Nashville Basin. Slopes range from 2 to 12 percent.

Typical pedon of Bradyville silt loam, 5 to 12 percent slopes, eroded; south of Paynes Store on U.S. Highway 231 to Canoe Road, 2,200 feet west on Canoe Road, 1,000 feet south of the road:

Ap—0 to 7 inches; brown (7.5YR 4/4) silt loam; weak fine granular structure; friable, slightly hard; many fine roots; moderately acid; abrupt smooth boundary.

Bt1—7 to 15 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable, hard; common distinct clay films on faces of peds; few fine roots; common fine dark brown concretions; strongly acid; gradual smooth boundary.

Bt2—15 to 24 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm, hard; common distinct clay films on faces of peds; few fine roots; many fine dark brown concretions; few small fragments of chert 1/4 to 1 inch across; strongly acid; gradual smooth boundary.

Bt3—24 to 48 inches; red (2.5YR 4/6) clay; moderate medium and fine angular and subangular blocky structure; very firm; common distinct clay films on faces of peds; few fine roots; common small dark brown concretions; few small fragments of chert 1/4 to 1 inch across; strongly acid; gradual smooth boundary.

BC—48 to 53 inches; strong brown (7.5YR 5/6) clay; weak medium subangular blocky structure; very firm; few fine dark brown concretions; 10 percent fragments of chert 1/4 inch to 3 inches across; moderately acid; abrupt wavy boundary.

R—53 inches; limestone bedrock.

Depth to bedrock ranges from 40 to 60 inches. The content of chert fragments ranges from 0 to 15 percent.

The Ap horizon has hue of 7.5YR or 10YR, value of 4, and chroma of 3 or 4.

The Bt horizon has hue of 5YR or 2.5YR, value of

4 or 5, and chroma of 4 to 6. It is silty clay loam in the upper part and silty clay or clay in the lower part.

The BC horizon, where present, has hue of 7.5YR, 5YR, or 2.5YR, value of 4 or 5, and chroma of 4 to 6. In some pedons it has yellowish, brownish, or reddish mottles. It is clay or silty clay

Byler Series

The Byler series consists of very deep, moderately well drained soils that have a fragipan. These soils formed in loess or alluvium over old alluvium or residuum from limestone on terraces. They are in the Nashville Basin. Slopes range from 1 to 4 percent.

Typical pedon of Byler silt loam, 1 to 4 percent slopes; west of Hartsville, 0.6 mile south of Paynes Store on Highway 231 to its intersection with Brown Road, 600 feet south of the intersection and 200 feet west of Highway 231:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; moderate fine and medium granular structure; friable; many fine roots; few fine pores; few pebbles and fragments of chert; few fine black concretions; moderately acid; abrupt smooth boundary.

BA—9 to 14 inches; yellowish brown (10YR 5/4) silt loam; few fine faint brown mottles; weak medium subangular blocky and moderate medium granular structure; friable; common fine roots; few fine pores; few faint clay films on faces of peds; few pebbles and fragments of chert; few fine black concretions; moderately acid; clear smooth boundary.

Bt—14 to 22 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; few faint clay films on faces of peds; few fragments of chert and gravel; few fine black concretions; moderately acid; clear smooth boundary.

Btx1—22 to 26 inches; yellowish brown (10YR 5/4) silty clay loam; few medium distinct strong brown (7.5YR 5/6) mottles and few fine and medium distinct pale brown (10YR 6/3) and light brownish gray (10YR 6/2) mottles; weak thick platy structure parting to moderate medium subangular blocky; very firm; few fine roots; few fine pores: few faint clay films on faces of peds; few fragments of chert and gravel; common fine and medium brown and black concretions; moderately acid; clear wavy boundary.

Btx2—26 to 42 inches; mottled yellowish brown (10YR 5/4), strong brown (7.5YR 4/6), gray (10YR 6/1), and light brownish gray (10YR 6/2) silt loam; weak thick platy structure parting to moderate medium subangular blocky; very firm; few faint clay films on faces of peds; few fine and medium pores; few fragments of chert and gravel; few fine brown and black concretions; strongly acid; clear irregular boundary.

2Bt—42 to 60 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/4), light brownish gray (2.5Y 6/2), and strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; about 5 percent fragments of chert and gravel; common fine, medium, and coarse brown and black concretions; strongly acid.

Depth to limestone bedrock is more than 60 inches.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is silt loam.

The BA horizon, where present, has hue of 10YR, value of 4 or 5, and chroma of 4. It is silt loam.

The Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The Btx horizon is mottled in shades of brown and gray, or it has hue of 10YR, value of 6, and chroma of 2 to 4 and has brownish and grayish mottles. It is silt loam or silty clay loam.

The 2Bt horizon is mottled in shades of brown and gray, or it has hue of 10YR, value of 5 or 6, and chroma of 2 and has brownish and grayish mottles. It is clay or silty clay.

Capshaw Series

The Capshaw series consists of very deep, moderately well drained soils that formed in loess or alluvium over old alluvium or residuum from limestone on terraces. They are in the Nashville Basin. Slopes range from 2 to 6 percent.

Typical pedon of Capshaw silt loam, 2 to 6 percent slopes; 2.6 miles northeast of Cato on Dixon Creek Road to its intersection with Golden Hollow Road, 1,600 feet east on Golden Hollow Road, 100 feet south of the road:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

Bt1—9 to 18 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; few fine black concretions; strongly acid; gradual wavy boundary.

Bt2—18 to 41 inches; yellowish brown (10YR 5/6) clay; common medium distinct light olive brown

(2.5Y 5/4) and pale brown (10YR 6/3) mottles and few fine distinct light brownish gray (10YR 6/2) mottles; moderate medium angular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; common fine and medium black concretions; strongly acid; gradual wavy boundary.

BC—41 to 60 inches; light brownish gray (10YR 6/2) clay; common medium distinct grayish brown (2.5Y 5/2) and common medium prominent light olive brown (2.5Y 4/4) mottles; massive in place parting to weak coarse subangular blocky structure; very firm; few faint clay films on faces of peds; common fine and medium black concretions; strongly acid.

Depth to bedrock is more than 60 inches.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is silt loam.

The Bt horizon has hue of 10YR, value of 5, and chroma of 4 to 6. The lower part of the horizon has mottles in shades of brown and gray. Texture is silty clay loam or silty clay in the upper part of the horizon and silty clay or clay in the lower part.

The BC horizon and the C horizon, where present, have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 4 and have mottles in shades of brown and gray, or they are mottled in shades of brown, yellow, and gray. The texture is silty clay or clay.

Dellrose Series

The Dellrose series consists of very deep, well drained soils that formed in colluvium on footslopes along the base of the Highland Rim Escarpment. Slopes range from 12 to 30 percent.

Typical pedon of Dellrose gravelly silt loam, 20 to 30 percent slopes, eroded; north of Willard, from the intersection of Skillet Branch Road and Willard Road, 1.2 miles north on Skillet Branch Road to Carr Branch Road, 1.0 mile on Carr Branch Road, 800 feet south of Carr Branch Road:

Ap—0 to 7 inches; dark brown (10YR 3/3) gravelly silt loam; moderate fine and medium granular structure; friable; common very fine and fine roots; common very fine and fine pores; about 25 percent fragments up to 2 inches across; moderately acid; abrupt smooth boundary.

BA—7 to 11 inches; brown (7.5YR 4/4) gravelly silt loam; moderate fine and medium granular and weak fine subangular blocky structure; friable; common very fine and fine roots; common fine and few medium pores; about 30 percent fragments of gravel up to 2 inches across; moderately acid; clear smooth boundary.

Bt1—11 to 22 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak fine and medium subangular blocky structure; friable; common very fine and few fine roots; common very fine and few fine pores; few faint clay films on faces of peds; about 30 percent fragments up to 2 inches across; strongly acid; clear smooth boundary.

Bt2—22 to 43 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; moderate fine and medium subangular blocky structure; friable; common very fine and few fine roots; common very fine and few fine pores; few distinct clay films on faces of peds; about 30 percent fragments up to 2 inches across; strongly acid; clear smooth boundary.

Bt3—43 to 60 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; moderate fine and medium subangular blocky structure; friable; common very fine and few fine roots; common very fine and few fine pores; common distinct clay films on faces of peds; about 25 percent fragments up to 3 inches across; moderately acid.

Depth to limestone bedrock is more than 60 inches. The content of fragments of shale and chert ranges from about 15 to 35 percent.

The Ap horizon has hue of 10YR, value of 3, and chroma of 2 or 3. It is gravelly silt loam.

The BA horizon, where present, has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In some pedons it has brownish mottles. It is gravelly silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. In most pedons it has brownish mottles. It is gravelly silt loam or gravelly silty clay loam.

Eagleville Series

The Eagleville series consists of moderately deep, somewhat poorly drained soils that formed in clayey alluvium on flood plains in the Nashville Basin. Slopes range from 0 to 2 percent.

Typical pedon of Eagleville silty clay loam, occasionally flooded; north of Hartsville, 0.6 mile east on Shoot Road from its intersection with Halltown Road, 100 feet north of Shoot road:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak fine granular structure; friable; many fine roots; many fine pores; few fine black concretions; neutral; abrupt smooth boundary.

A—6 to 18 inches; very dark grayish brown (10YR 3/2) silty clay; moderate medium subangular blocky structure; firm; many fine roots; many fine pores; few black concretions; slightly acid; clear smooth boundary.

Bg—18 to 30 inches; dark gray (10YR 4/1) clay; many medium prominent olive brown (2.5Y 4/4) mottles; strong medium subangular blocky structure; very firm; few fine roots; common fine pores; many fine brown concretions; neutral; clear smooth boundary.

Cg—30 to 37 inches; mottled gray (5Y 5/1), olive gray (5Y 5/2), and light olive brown (2.5Y 5/4) clay; massive; very firm; many fine brown concretions; neutral; abrupt smooth boundary.

R—37 inches; hard limestone bedrock.

Depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 0 to 5 percent in the A and B horizons and from 0 to 15 in the C horizon.

The Ap horizon has hue of 10YR and value and chroma of 2 or 3. It is silty clay loam.

The A horizon has hue of 10YR, value of 2 or 3, chroma of 1 or 2. It is silty clay or clay.

The Bg horizon hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or less. In most pedons it has brownish mottles. It is silty clay or clay.

The Cg horizon is mottled in shades of brown and gray. It is silty clay or clay.

Egam Series

The Egam series consists of very deep, moderately well drained soils that formed in alluvium on flood plains in the Nashville Basin. Slopes range from 0 to 2 percent.

Typical pedon of Egam silt loam, occasionally flooded; east of Hartsville, near the Smith County line, 1,600 feet north on Lick Creek Road from its intersection with Highway 25, about 400 feet east of road:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine and medium granular structure; friable; common very fine and fine roots; few fine and medium pores; slightly acid; abrupt smooth boundary.

A—8 to 22 inches; very dark brown (10YR 2/2) silty clay loam; moderate medium prismatic structure parting to strong medium angular blocky; firm; common very fine and fine roots; common very fine and fine and few medium pores; slightly acid; gradual smooth boundary.

Bw1—22 to 36 inches; very dark brown (10YR 2/2) clay; moderate medium prismatic structure parting to strong medium angular blocky; firm; few very fine and fine roots; common very fine and fine pores; slightly acid; clear smooth boundary.

Bw2—36 to 60 inches; dark yellowish brown (10YR 4/4) clay; few fine faint dark brown and few fine distinct dark grayish brown (10YR 4/2) mottles; moderate medium angular and subangular blocky structure; friable; few very fine and fine roots; common very fine and fine pores; slightly acid.

Depth to bedrock is more than 60 inches.

The Ap horizon has hue of 10YR and value and chroma of 2 or 3. It is silt loam.

The A horizon has hue of 10YR and value and chroma of 2 or 3. It is silty clay loam or silty clay.

The Bw1 horizon has hue of 10YR and value and chroma of 2 or 3. In some pedons it has brownish mottles. It is silty clay or clay.

The Bw2 horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4 and has mottles in shades of brown. It is silty clay or clay.

Hampshire Series

The Hampshire series consists of deep, well drained soils that formed in residuum from interbedded siltstone, sandstone, shale, and limestone. These soils are on uplands in the Nashville Basin. Slopes range from 5 to 20 percent.

Typical pedon of Hampshire silt loam, 12 to 20 percent slopes, eroded; west of Hartsville, 0.6 mile south of Paynes Store on Highway 231 to its intersection with Brown Road, 200 feet west on Brown Road, 150 feet north of the road:

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; common fine and medium roots; common fine and medium pores; few small black concretions; moderately acid; clear smooth boundary.

Bt1—9 to 16 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular and angular blocky structure; friable; common fine and medium roots; few fine and medium pores; common distinct clay films on faces of peds; few small black concretions; few thin weathered fragments 1/4 to 3/4 inch across; strongly acid; gradual smooth boundary.

Bt2—16 to 28 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular and angular blocky structure; friable; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; few fine roots; few medium pores; few small black concretions; few thin weathered fragments 1/4 to 3/4 inch across; strongly acid; clear wavy boundary.

Bt3—28 to 36 inches; strong brown (7.5YR 5/6) clay;

few fine distinct yellowish brown (10YR 5/4) and yellowish red (5YR 5/6) mottles; moderate medium angular and subangular blocky structure; firm; few fine roots; few fine pores; common prominent clay films on faces of peds; about 10 percent thin weathered fragments 1/2 inch to 2 inches across; strongly acid; clear smooth boundary.

C—36 to 49 inches; strong brown (7.5YR 5/6) very channery clay loam; few fine distinct yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) mottles; massive; about 45 percent thin weathered fragments 1 to 3 inches across; strongly acid; abrupt smooth boundary.

Cr—49 to 60 inches; interbedded strata of weathered rock 1/2 inch to 3 inches thick, separated by thin horizontal seams of sandy and clayey material; strongly acid.

Depth to strata of weathered bedrock ranges from 40 to 60 inches. The content of weathered fragments ranges from 0 to 15 percent in the A and B horizons and from 20 to 50 percent in the C horizon.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 4. It is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 6. In most pedons it has brownish and reddish mottles in the lower part. It is clay or silty clay.

The C horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 4 to 6. In most pedons it has brownish and reddish mottles. It is commonly very channery clay loam or very channery loam.

The Cr material is interbedded strata of weathered sandstone, siltstone, shale, and limestone in shades of brown and red.

Harpeth Series

The Harpeth series consists of very deep, well drained soils that formed in loess and alluvium over residuum from limestone. These soils are on high terraces and uplands in the Nashville Basin. Slopes range from 2 to 10 percent.

Typical pedon of Harpeth silt loam, 5 to 10 percent slopes, eroded; 0.6 mile south on Highway 141 from courthouse in Hartsville, about 700 feet west on a farm road, 50 feet north of the road:

Ap—0 to 9 inches; dark yellowish brown (10YR 3/4) silt loam; weak fine granular structure; friable; many fine roots; many fine pores; strongly acid; abrupt smooth boundary.

BA—9 to 14 inches; strong brown (7.5YR 4/6) and brown (10YR 4/3) silt loam; weak fine granular structure parting to weak fine subangular blocky; friable; many fine roots; many fine pores; few fine iron-manganese concretions; moderately acid; clear smooth boundary.

Bt1—14 to 27 inches; strong brown (7.5YR 4/6) silty clay loam; weak fine and medium subangular blocky structure; friable; common fine roots; many fine tubular pores; few faint clay films on faces of peds; few fine iron-manganese concretions; slightly acid; clear smooth boundary.

Bt2—27 to 47 inches; strong brown (7.5YR 4/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many fine pores; common distinct clay films on faces of peds; common fine iron-manganese concretions; slightly acid; clear smooth boundary.

2Bt3—47 to 60 inches; strong brown (7.5YR 4/6) clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common fine pores; common distinct clay films on faces of peds; common fine iron-manganese concretions; about 2 percent pebbles up to 1/2 inch in diameter; slightly acid.

Depth to limestone bedrock is more than 60 inches. The content of coarse fragments ranges from 0 to 5 percent throughout the profile.

The Ap horizon dominantly has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 4. In some pedons the surface layer is less than 7 inches thick and has hue of 10YR or 7.5YR, value of 3, and chroma of 2 or 3.

The Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam. In most pedons the horizon has brownish mottles in the lower part.

The 2Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. Commonly, it is clay loam or silty clay loam. In some pedons, however, it is silty clay or clay below a depth of about 48 inches. In most pedons the horizon has few or common brownish mottles.

Holston Series

The Holston series consists of very deep, well drained soils that formed in old alluvium on terraces in the Nashville Basin. Slopes range from 2 to 8 percent.

Typical pedon of Holston loam, 2 to 8 percent slopes, eroded; west of Hartsville, 0.3 mile north of Highway 231 bridge over Old Hickory Lake, 800 feet west of the road:

Ap—0 to 9 inches; brown (10YR 4/3) loam; weak fine granular structure; friable; many medium and fine roots; many fine pores; strongly acid; abrupt smooth boundary.

Bt1—9 to 16 inches; dark yellowish brown (10YR 4/6) loam; weak medium subangular blocky structure; friable; many medium and fine roots; many fine pores; strongly acid; gradual smooth boundary.

Bt2—16 to 33 inches; strong brown (7.5YR 5/6) clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; moderate medium and fine subangular blocky structure; friable; many fine roots; many fine pores; few fine black concretions; strongly acid; gradual smooth boundary.

Bt3—33 to 60 inches; strong brown (7.YR 5/8) sandy clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine black concretions; strongly acid.

Depth to bedrock is more than 60 inches. Some pedons have less than 5 percent rounded quartz pebbles throughout, and some have a few fragments of chert in the lower part of the profile.

The Ap horizon has a hue of 10YR or 7.5YR, value of 4, and chroma of 3 or 4. It is loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 6 to 8. It is loam, clay loam, or sandy clay loam.

Humphreys Series

The Humphreys series consists of very deep, well drained soils that formed in gravelly colluvium and alluvium on terraces and footslopes. These soils dominantly are across the central part of the county but are also in a few areas in the northern part. Slopes range from 2 to 8 percent.

Typical pedon of Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded; east of Cato, 2,000 feet east on Massey Hollow road from its intersection with Ellis road, 10 feet south of road:

Ap—0 to 8 inches; dark brown (10YR 3/3) gravelly silt loam; moderate medium granular structure; friable; many fine roots; common fine and very fine pores; about 25 percent gravel up to 2 inches across; moderately acid; clear smooth boundary.

BA—8 to 17 inches; brown (10YR 4/3) gravelly silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; common fine and very fine pores; about 30 percent gravel 1/8 inch to 2 inches across; moderately acid; clear smooth boundary.

Bt1—17 to 36 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common fine and very fine pores; few faint clay films on faces of peds; about 15 percent gravel up to 2 inches across; moderately acid; gradual smooth boundary.

Bt2—36 to 50 inches; dark yellowish brown (10YR 4/4) gravelly silty clay loam; common fine and medium faint yellowish brown (10YR 5/4) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; common fine pores; few distinct clay films on faces of peds; about 15 percent gravel up to 2 inches across; moderately acid; gradual smooth boundary.

C—50 to 60 inches; dark yellowish brown (10YR 4/4) gravelly clay loam; common fine faint yellowish brown (10YR 5/4) mottles; massive; friable; about 20 percent gravel up to 2 inches across; moderately acid.

Depth to bedrock is more than 60 inches. The content of gravel ranges from about 10 to 25 percent in the A horizon, from about 15 to 35 percent in the B horizon, and from 20 to more than 35 percent in the C horizon.

The Ap horizon has hue of 10YR, value of 3, and chroma of 3 or 4. It is gravelly silt loam.

The BA horizon, where present, has hue of 10YR, value of 4, and chroma of 3 or 4. It is gravelly silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is gravelly silt loam or gravelly silty clay loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 4. Commonly, it is gravelly clay loam. In some pedons, however, it is gravelly silty clay loam.

Inman Series

The Inman series consists of moderately deep, well drained soils that formed in residuum from limestone on uplands in the Nashville Basin. Slopes range from 10 to 35 percent.

Typical pedon of Inman flaggy silty clay loam, 10 to 20 percent slopes, eroded; south of Hartsville, 0.7 mile east on Riadon Road from its intersection with Highway 141, about 2,000 feet north of the road:

Ap—0 to 5 inches; brown (10YR 4/3) flaggy silty clay loam; moderate medium granular structure; friable; many very fine and fine roots; common very fine and fine pores; about 25 percent channers and flagstones of weathered limestone; neutral; abrupt smooth boundary.

Bw1—5 to 13 inches; yellowish brown (10YR 5/4) flaggy silty clay; few fine distinct pale brown (10YR 6/3) and strong brown (7.5YR 5/6) mottles;

moderate medium subangular blocky structure; firm; common fine roots; few fine pores; few faint clay films on faces of peds; about 25 percent channers and flagstones of weathered limestone; slightly acid; clear broken boundary.

Bw2—13 to 24 inches; light olive brown (2.5Y 5/4) flaggy silty clay; common fine distinct strong brown (7.5YR 5/6) and pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure parting to weak medium platy in the lower part; firm; few fine roots; about 30 percent channers and flagstones of weathered limestone; neutral; gradual wavy boundary.

Cr/B—24 to 33 inches; 80 percent level-bedded, brownish, weathered limestone strata about 1 to 3 inches thick (Cr); 20 percent horizontal seams of mottled light olive brown (2.5Y 5/4), strong brown (7.5YR), and grayish brown (2.5Y 5/2) silty clay 1/2 to 1 inch thick (B); few fine prominent gray (10YR 6/1) and light gray (10YR 7/2) streaks and pockets of soft, highly weathered rock; weak fine subangular blocky structure; firm; few very fine roots in seams; neutral; abrupt smooth boundary.

Cr—33 to 60 inches; thin, level-bedded, weathered, brownish limestone strata.

Depth to strata of weathered limestone bedrock ranges from 20 to 40 inches. The content of channers and flagstones ranges from 15 to 35 percent.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. It is flaggy silty clay loam.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. In most pedons it has brownish mottles. It is flaggy clay or flaggy silty clay.

The Cr material is brownish or grayish strata of weathered limestone.

Lindell Series

The Lindell series consists of very deep, moderately well drained soils that formed in loamy alluvium. These soils are on flood plains along drainageways in the Nashville Basin. Slopes range from 0 to 2 percent.

Typical pedon of Lindell silt loam, occasionally flooded; south of Hartsville, 2.0 miles east on Cedar Bluff Road from its intersection with Highway 141, about 4,000 feet north of the road, 1,000 feet south of Old Hickory Lake:

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

AB—10 to 15 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; common fine pores; slightly acid; clear smooth boundary.

Bw1—15 to 22 inches; dark yellowish brown (10YR 4/4) loam; common medium distinct dark grayish brown (10YR 4/2) mottles; weak medium and fine subangular blocky structure; friable; many fine and medium roots; common fine pores; slightly acid; clear smooth boundary.

Bw2—22 to 32 inches; dark yellowish brown (10YR 4/4) silt loam; common fine distinct dark grayish brown (10YR 4/2) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; common fine pores; slightly acid; clear smooth boundary.

Cg—32 to 60 inches; dark grayish brown (10YR 4/2) loam; few medium distinct yellowish brown (10YR 5/6) mottles; massive; few fine roots; common fine pores; common fine brown concretions; neutral.

Depth to bedrock is more than 60 inches. The content of coarse fragments ranges from 0 to 5 percent throughout the profile.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is silt loam.

The B horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4 and has mottles in shades of gray and brown. It is silt loam, silty clay loam, or loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 2. In most pedons it has mottles in shades of gray or brown.

Melvin Series

The Melvin series consists of very deep, poorly drained soils that formed in alluvium in slight depressions on flood plains along drainageways. These soils are in the Nashville Basin and on the Highland Rim. Slopes range from 0 to 2 percent.

Typical pedon of Melvin silt loam, frequently flooded; west of Hartsville, 250 feet east of Highway 231 bridge over Old Hickory Lake, 1,000 feet north of Old Hickory Lake:

A—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; friable; common fine, medium, and coarse roots; common very fine and fine pores; moderately acid; clear smooth boundary.

Bg—6 to 28 inches; light brownish gray (10YR 6/2) silt loam; few fine faint grayish brown and few fine distinct dark yellowish brown (10YR 4/4) mottles; massive parting to weak medium subangular blocky structure; friable; common fine roots; common fine pores; common black and brown stains 1/4 inch to 2 inches across; about 2 percent fragments of chert 1/4 to 1 inch across; moderately acid; gradual smooth boundary.

Cg—28 to 60 inches; light gray (10YR 7/2) silt loam; common fine distinct grayish brown (10YR 5/2) mottles; massive; friable; few fine roots; common fine pores; many black stains 1/2 inch to 3 inches across; about 10 percent fragments of chert 1/2 inch to 3 inches across; moderately acid.

Depth to limestone bedrock is more than 60 inches. The content of chert fragments ranges from 0 to 5 percent to a depth of about 28 inches and from 0 to 15 percent below this depth.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. It is silt loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. In most pedons it has brownish or grayish mottles. It is silt loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. In most pedons it has brownish or grayish mottles. It is silt loam.

Mimosa Series

The Mimosa series consists of deep, well drained soils that formed in residuum from limestone on uplands in the Nashville Basin. Slopes range from 5 to 45 percent.

Typical pedon of Mimosa silt loam, 5 to 12 percent slopes, eroded; west of Hartsville, 0.4 mile south on Boat Dock Road from its intersection with Old State Highway 25, about 1,800 feet east of Boat Dock Road and 200 feet south of a barn:

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; common very fine and fine roots; few fine and very fine pores; few fine brown and black concretions; moderately acid; abrupt smooth boundary.

Bt1—7 to 11 inches; yellowish brown (10YR 5/6) silty clay; moderate medium subangular and angular blocky structure; firm; common fine roots; few fine pores; common distinct clay films on faces of peds; few fine brown and black concretions; strongly acid; gradual wavy boundary.

Bt2—11 to 21 inches; yellowish brown (10YR 5/6) clay; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; very firm; few fine roots; few fine pores; many distinct clay films on faces of peds; few fine black concretions and stains; strongly acid; gradual wavy boundary.

Bt3—21 to 49 inches; yellowish brown (10YR 5/4) clay; few fine faint yellowish brown and few fine distinct pale brown (10YR 6/3) mottles; moderate medium angular blocky structure; very firm; few fine roots; few very fine pores; common distinct clay films on faces of peds; common fine black concretions and stains; strongly acid; gradual wavy boundary.

C—49 to 53 inches; yellowish brown (10YR 5/4) clay; common medium distinct yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) and gray (10YR 6/l) mottles; massive; very firm; common black stains; moderately acid; abrupt wavy boundary.

R—53 inches; gray limestone bedrock.

Depth to limestone bedrock ranges from 40 to 60 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It is dominantly silt loam. In severely eroded areas, however, it is silty clay.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In most pedons it has brownish mottles. It is clay or silty clay.

The C horizon, where present, has hue of 10YR or 2.5Y, value of 5, and chroma of 4 to 6. In most pedons it has brownish and grayish mottles. It is clay or silty clay.

Nesbitt Series

The Nesbitt series consists of very deep, moderately well drained soils that formed in a silty mantle and old underlying alluvium or limestone residuum. These soils are on high terraces and uplands in the Nashville Basin. Slopes range from 2 to 12 percent.

Typical pedon of Nesbitt silt loam, 6 to 12 percent slopes, eroded; south of Hartsville on Highway 141 to its intersection with Cedar Bluff Road, east on Cedar Bluff Road 1.4 miles to a farmstead, 2,800 feet north of the farmstead, 2,000 feet south of Old Hickory Lake:

Ap—0 to 7 inches; dark brown (7.5YR 3/4) silt loam; weak medium granular structure; friable; many fine roots; common medium and fine pores; few small black concretions; moderately acid; abrupt smooth boundary.

BA—7 to 11 inches; brown (7.5YR 4/4) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium granular structure; friable; common fine roots; common fine pores; few small black concretions; moderately acid; abrupt smooth boundary.

Bt1—11 to 22 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; few distinct clay films on faces of peds; common small black concretions and stains; strongly acid; clear wavy boundary.

Bt2—22 to 32 inches; yellowish brown (10YR 5/6) silt loam; common fine distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky and angular blocky structure; firm; few fine roots; common very fine pores; few distinct clay films on faces of peds; many small black concretions and stains; about 3 percent streaks and pockets of pale brown (10YR 6/3) silt; brittle in about 25 percent of the horizon; strongly acid; clear irregular boundary.

2Bt3—32 to 60 inches; yellowish red (5YR 5/6) silty clay loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles and common fine and medium prominent light brownish gray (10YR 6/2) mottles; moderate medium angular and subangular blocky structure; firm, brittle in 25 percent of the horizon; few fine roots; common very fine pores; many prominent clay films on faces of peds; common large black concretions and stains; strongly acid.

Depth to rock is more than 60 inches.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 4. It is silt loam.

The BA horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. In most pedons it has brownish mottles. It is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In most pedons it has brownish mottles throughout and mottles of chroma 2 or less in the lower part. In some pedons it has a few eluvial streaks and pockets of pale brown (10YR 6/3) silt. The texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 6 to 8 and has mottles in shades of brown and gray. In most pedons it is brittle in part of the volume. It is silty clay loam.

Ocana Series

The Ocana series consists of very deep, well drained soils that formed in alluvium on flood plains on the Highland Rim and at the base of the Highland Rim Escarpment across the central part of the county. Slopes range from 0 to 2 percent.

Typical pedon of Ocana gravelly silt loam, occasionally flooded; north of Beechgrove, 0.6 mile south of Macon County line on Highway 10, about 900 feet east of road:

Ap—0 to 8 inches; brown (10YR 4/3) gravelly silt loam; weak fine and medium granular structure; friable; common very fine and few fine roots; about 15 percent gravel up to 3 inches across; neutral; clear smooth boundary.

Bw1—8 to 18 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak fine granular and subangular blocky structure; friable; common very fine and few fine roots; common very fine and few fine pores; about 15 percent gravel up to 3 inches across; neutral; clear smooth boundary.

Bw2—18 to 38 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; few medium faint dark yellowish brown (10YR 4/4) mottles; weak fine subangular blocky structure; friable; common very fine and few fine roots; about 30 percent gravel up to 3 inches across; neutral; abrupt smooth boundary.

C—38 to 60 inches; brown (10YR 4/3) very gravelly silt loam; few medium distinct grayish brown (10YR 5/2) and few fine faint dark yellowish brown mottles; massive; friable; few fine roots; about 60 percent gravel up to 3 inches across; neutral.

Depth to limestone bedrock is more than 60 inches. The content of gravel ranges from 15 to 35 percent, except in the C horizon, which contains up to 60 percent gravel.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is gravelly silt loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. In most pedons it has brownish mottles. It is gravelly silt loam or gravelly loam.

The C horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 3 or 4 and has brownish and grayish mottles. It is very gravelly silt loam or very gravelly loam.

Sugargrove Series

The Sugargrove series consists of deep, well drained soils that formed in material weathered from interbedded limestone, siltstone, and shale on uplands. These soils are in the northern part of the county on the Highland Rim. Slopes range from 12 to 20 percent.

Typical pedon of Sugargrove gravelly silt loam, 12 to 20 percent slopes, eroded; north of Templow, 1.1 miles south of the Macon County line on Gravelly Hill Road, 50 feet west of the road:

Ap—0 to 6 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; many fine and medium roots; common fine pores; about 18 percent fragments of chert and channers of siltstone; strongly acid; clear smooth boundary.

BA—6 to 12 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine granular structure; very friable; common fine and few medium roots; common fine pores; about 20 percent fragments of chert and channers of siltstone; very strongly acid; clear wavy boundary.

Bt1—12 to 17 inches; yellowish brown (10YR 5/6) gravelly silty clay loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots; common fine pores; about 20 percent fragments of chert and channers of siltstone; very strongly acid; clear wavy boundary.

Bt2—17 to 32 inches; yellowish brown (10YR 5/6) gravelly silty clay loam; few medium distinct strong brown (7.5YR 4/6) mottles; moderate fine and medium subangular blocky structure; friable; few fine and medium roots; common fine pores; few fine distinct clay films on faces of peds; about 20 percent fragments of chert and channers of siltstone; very strongly acid; clear wavy boundary.

Bt3/C—32 to 41 inches; about 60 percent yellowish brown (10YR 5/6) very gravelly silty clay (Bt); few fine distinct strong brown (7.5YR 4/6) and pale brown (10YR 6/3) mottles and few fine prominent yellowish red (5YR 5/8) mottles; moderate fine and medium subangular blocky structure; friable; few fine and medium roots; common fine pores; few fine distinct clay films on faces of peds and on rock fragments; about 40 percent strong brown (7.5YR 5/6) very gravelly silty clay (C); few fine distinct (10YR 5/6) and few fine prominent yellowish red (5YR 5/6) and light brownish gray (10YR 6/2) mottles; massive; firm; about 45 percent fragments of chert and channers of siltstone throughout horizon; very strongly acid; clear wavy boundary.

Cr—41 to 49 inches; horizontally bedded, fractured siltstone and chert; common medium distinct clay films on vertical and horizontal faces of rock fragments; very strongly acid.

R—49 inches; hard, gray bedrock.

Depth to paralithic contact ranges from 40 to 60 inches. Depth to hard bedrock is 40 inches or more. The content of rock fragments ranges from 10 to 35 percent in the A horizon and in the upper part of the Bt horizon and from 15 to 55 percent in the lower part of the Bt horizon and in the B/C horizon.

The Ap and BA horizons have hue of 10YR, value of 4 or 5, and chroma of 3 or 4. The texture in the fine-earth fraction is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 6. In most pedons it has mottles in shades of brown and red in the lower part. The texture in the fine-earth fraction is silt loam or silty clay loam.

The Bt3/C horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 to 8. In most pedons it has mottles in shades of brown, gray, and red. The texture in the fine-earth fraction is silt loam, silty clay loam, silty clay, or clay.

The Cr horizon is interbedded, weathered siltstone, shale, and limestone.

The R layer is hard, grayish to brownish limestone.

Sulphura Series

The Sulphura series consists of moderately deep, somewhat excessively drained soils that formed mainly in residuum from limestone on uplands. These soils are on the escarpment of the Highland Rim in the northern and western parts of the county. Slopes range from 25 to 65 percent.

Typical pedon of Sulphura channery silt loam, 25 to 65 percent slopes; north of Templow, 1.0 mile south of the Macon County line on Gravelly Hill Road, 200 feet west of the road:

A—0 to 3 inches; dark brown (10YR 3/3) channery silt loam; weak fine granular structure; friable; common fine roots; common fine pores; 20 percent channers of limestone and chert; moderately acid; abrupt smooth boundary.

Bw1—3 to 19 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable; few fine and medium roots; common fine pores; 40 percent channers of limestone and chert; strongly acid; clear smooth boundary.

Bw2—19 to 36 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable; few fine and medium roots; common fine pores; common streaks and pockets of soft, weathered relic rock; 55 percent channers of limestone and chert; strongly acid; clear smooth boundary.

R—36 inches; grayish limestone bedrock.

Depth to limestone bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 15 to 35 percent in the A horizon and from 35 to 60 percent in the Bw horizon.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. It is channery silt loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 6. It is very channery silt loam or very channery silty clay loam.

The R horizon is dominantly hard limestone with thin strata of siltstone and shale.

Talbott Series

The Talbott series consists of moderately deep, well drained soils that formed in clayey residuum weathered from limestone on uplands. These soils are in the southeastern part of the county. They are in the Nashville Basin. Slopes range from 3 to 15 percent.

Typical pedon of Talbott silt loam, 3 to 10 percent slopes, rocky; south of Paynes Store on U.S. Highway 231 to Canoe Road, 2,600 feet west on Canoe Road, 1,000 feet south of the road:

Ap—0 to 6 inches; brown (7.5YR 4/4) silt loam; moderate medium and fine granular structure; friable; common very fine and fine roots; common very fine and fine pores; common small black concretions; about 5 percent chert gravel; strongly acid; abrupt smooth boundary.

Bt1—6 to 14 inches; yellowish red (5YR 4/6) clay; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; common very fine and fine roots; common very fine and fine pores; few faint clay films on faces of peds; common small black concretions; few black stains on faces of peds; about 5 percent chert gravel; moderately acid; clear wavy boundary.

Bt2—14 to 21 inches; red (2.5YR 4/6) clay; common fine distinct reddish brown (5YR 4/4) mottles; moderate medium and fine subangular blocky structure; firm; common fine roots; common fine pores; common prominent clay films on faces of peds; common small black concretions; few black stains on ped faces; about 2 percent chert gravel; moderately acid; clear wavy boundary.

Bt3—21 to 28 inches; red (2.5YR 4/6) clay; few fine prominent yellowish brown (10YR 5/6) and many coarse prominent strong brown (7.5YR 5/6) mottles, dominantly in the lower part of the horizon; moderate medium and fine angular blocky structure; very firm; few fine roots; few fine pores; many prominent clay films on faces of peds; few black stains on faces of peds; less than 1 percent chert gravel; moderately acid; clear wavy boundary.

R—28 inches; limestone bedrock.

Depth to limestone bedrock ranges from 20 to 40 inches. The content of coarse fragments ranges from 0 to 10 percent throughout the profile.

The Ap horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 3 or 4. It is silt loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons it has reddish or brownish mottles. It is silty clay or clay.

The R horizon is hard, grayish limestone.

Waynesboro Series

The Waynesboro series consists of very deep, well drained soils that formed in old alluvium on uplands. These soils are in the southern part of the county. They are in the Nashville Basin. Slopes range from 5 to 20 percent.

Typical pedon of Waynesboro clay loam, 12 to 20 percent slopes, eroded; north about 1.3 miles on U.S. Highway 231 from the bridge over Old Hickory Lake to a farm road, 800 feet on the road, 200 feet west of a farm house:

Ap—0 to 5 inches; brown (7.5YR 4/4) clay loam; moderate medium granular structure; friable; common fine roots; common fine pores; few small black concretions; strongly acid; abrupt smooth boundary.

Bt1—5 to 15 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; few distinct clay films on faces of peds; few small black concretions; strongly acid; clear wavy boundary.

Bt2—15 to 30 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; common distinct clay films on faces of peds; few small black concretions and stains; strongly acid; clear smooth boundary.

Bt3—30 to 37 inches; red (2.5YR 4/6) clay; common fine distinct yellowish red (5YR 5/6) and common fine prominent yellowish brown (10YR 5/6) mottles; moderate medium angular blocky structure; friable; few fine roots; common fine pores; many prominent clay films on faces of peds; common small black concretions and stains; strongly acid; clear smooth boundary.

Bt4—37 to 60 inches; red (2.5YR 4/6) clay loam; common fine distinct yellowish red (5YR 5/6) and common fine prominent yellowish brown (10YR 5/6) and pale brown (10YR 6/3) mottles; moderate medium angular blocky structure; friable; few fine roots; common fine pores; many prominent clay films on faces of peds; common small black concretions and stains; strongly acid.

Depth to bedrock is more than 6 feet.

The Ap horizon has hue of 7.5YR or 10YR, value of 4, and chroma of 3 or 4. It is clay loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, chroma of 6 to 8. In most pedons it has brownish or grayish mottles in the lower part. It is clay loam or clay.

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Glossary

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

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

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

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial cone. The material washed down the sides of mountains and hills by ephemeral streams and deposited at the mouth of gorges in the form of a moderately steep, conical mass descending equally in all directions from the point of issue.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

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.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.

Aspect. The direction in which a slope faces.

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 40-inch profile or to a limiting layer is expressed as:

Very low	less than 2
Low	2 to 4
Moderate	4 to 6
High	more than 6

Backslope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Backslopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

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

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.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

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. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

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.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

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 is 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.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

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. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

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."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. 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.

Cropping system. Growing crops according to a planned system of rotation and management practices.

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.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

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.

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

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediments or that remains after finer particles have been removed by running water or the wind.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

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" *(8).*

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

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.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

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 pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

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.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Footslope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

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.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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 is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation 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; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

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 formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are 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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

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.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Lithic contact. A kind of boundary between soil and underlying material that is strongly cemented or more cemented.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

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. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

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.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

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).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

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.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

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

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Paralithic contact. A kind of contact between soil and underlying materials. In areas of paralithic contact, the underlying materials are commonly partially weathered bedrock or weakly consolidated bedrock, such as sandstone, siltstone, or shale.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

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

Permeability. The quality of the soil that enables water 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:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 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

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The 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

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

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

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

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

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

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

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

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.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

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

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

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

Shale. Sedimentary rock formed by the hardening of a clay deposit.

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

Shrink-swell (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.

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. Sedimentary rock made up of dominantly silt-sized particles.

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.

Sinkhole. A depression in the landscape where limestone has been dissolved.

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. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

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, the classes of simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 6 percent
Rolling	5 to 12 percent
Hilly	12 to 20 percent
Very hilly	20 to 45 percent
Steep	25 to 65 percent
Very steep	65 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

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

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

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 over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

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

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

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.

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

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

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

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.

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field 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 (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

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.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1955-84 at Portland, Tennessee)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	43.0	23.5	33.3	70	-8	17	4.27	1.72	6.01	7	4.6
February----	47.8	26.9	37.4	74	0	28	3.95	1.89	5.21	7	2.4
March-------	57.5	35.7	46.6	81	14	98	5.17	2.61	7.31	8	.9
April-------	69.5	46.1	57.8	86	26	253	4.82	2.76	6.46	8	.0
May---------	77.2	54.0	65.6	90	33	484	5.00	3.27	6.47	8	.0
June--------	84.5	62.0	73.3	95	46	699	4.44	1.90	6.44	6	.0
July--------	87.7	65.7	76.7	97	52	828	4.27	2.51	5.74	7	.0
August------	86.9	64.0	75.5	96	49	791	3.75	1.75	5.32	6	.0
September---	81.4	57.7	69.6	94	38	588	3.22	1.38	4.76	5	.0
October-----	71.0	45.7	58.4	87	26	279	3.01	1.27	4.39	5	.0
November----	58.5	36.6	47.6	81	14	61	4.25	2.36	5.88	6	.5
December----	48.3	28.5	38.4	71	2	31	4.51	2.17	6.24	7	1.4
Yearly:											
Average---	67.8	45.5	56.7	---	---	---	---	---	---	---	---
Extreme---	---	---	---	97	-9	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,157	50.66	42.61	58.75	80	9.8

* 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 1955-84 at Portland, Tennessee)

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--	Apr. 9	Apr. 12	Apr. 29
2 years in 10 later than--	Apr. 2	Apr. 7	Apr. 23
5 years in 10 later than--	Mar. 21	Mar. 29	Apr. 12
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 28	Oct. 15	Oct. 2
2 years in 10 earlier than--	Nov. 3	Oct. 21	Oct. 8
5 years in 10 earlier than--	Nov. 13	Nov. 2	Oct. 21

Table 3.--Growing Season

(Recorded in the period 1955-84 at Portland, Tennessee)

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	210	192	167
8 years in 10	219	201	175
5 years in 10	237	217	191
2 years in 10	255	233	207
1 year in 10	264	242	215

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AmB	Armour silt loam, 2 to 5 percent slopes	1,849	2.5
Ar	Arrington silt loam, occasionally flooded	3,192	4.3
BaC	Barfield-Rock outcrop complex, 5 to 20 percent slopes	2,352	3.2
BfC	Barfield-Rock outcrop-Ashwood complex, 5 to 20 percent slopes	7,843	10.5
BfF	Barfield-Rock outcrop-Ashwood complex, 20 to 70 percent slopes	9,065	12.2
BrB2	Bradyville silt loam, 2 to 5 percent slopes, eroded	398	0.5
BrC2	Bradyville silt loam, 5 to 12 percent slopes, eroded	390	0.5
ByB	Byler silt loam, 1 to 4 percent slopes	1,141	1.5
CpB	Capshaw silt loam, 2 to 6 percent slopes	757	1.0
DeD2	Dellrose gravelly silt loam, 12 to 20 percent slopes, eroded	631	0.8
DeE2	Dellrose gravelly silt loam, 20 to 30 percent slopes, eroded	1,844	2.5
Ea	Eagleville silty clay loam, occasionally flooded	832	1.1
Eg	Egam silt loam, occasionally flooded	711	1.0
HaC2	Hampshire silt loam, 5 to 12 percent slopes, eroded	1,137	1.5
HaD2	Hampshire silt loam, 12 to 20 percent slopes, eroded	1,441	1.9
HD	Hapludults, gravelly, gently rolling	164	0.2
HhB2	Harpeth silt loam, 2 to 5 percent slopes, eroded	2,331	3.1
HhC2	Harpeth silt loam, 5 to 10 percent slopes, eroded	2,552	3.4
HoB2	Holston loam, 2 to 8 percent slopes, eroded	216	0.3
HuB	Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded	204	0.3
InD2	Inman flaggy silty clay loam, 10 to 20 percent slopes, eroded	1,052	1.4
InE2	Inman flaggy silty clay loam, 20 to 35 percent slopes, eroded	3,106	4.2
Ln	Lindell silt loam, occasionally flooded	2,040	2.7
Me	Melvin silt loam, frequently flooded	540	0.7
MmC2	Mimosa silt loam, 5 to 12 percent slopes, eroded	5,243	7.0
MmD2	Mimosa silt loam, 12 to 20 percent slopes, eroded	570	0.8
MmD3	Mimosa silty clay, 8 to 20 percent slopes, severely eroded	3,459	4.6
MmE2	Mimosa silt loam, 20 to 35 percent slopes, eroded	840	1.1
MnC2	Mimosa silt loam, 5 to 20 percent slopes, eroded, very rocky	6,171	8.3
MrE	Mimosa-Rock outcrop complex, 20 to 45 percent slopes	2,310	3.1
NeB2	Nesbitt silt loam, 2 to 6 percent slopes, eroded	475	0.6
NeC2	Nesbitt silt loam, 6 to 12 percent slopes, eroded	1,077	1.4
Oc	Ocana gravelly silt loam, occasionally flooded	407	0.5
RtC	Rock outcrop-Talbott complex, 3 to 15 percent slopes	419	0.6
SgD2	Sugargrove gravelly silt loam, 12 to 20 percent slopes, eroded	409	0.5
SUF	Sulphura channery silt loam, 25 to 65 percent slopes	1,983	2.7
TbC	Talbott silt loam, 3 to 10 percent slopes, rocky	2,262	3.0
UA	Udarents, loamy, nearly level	120	0.2
UD	Udorthents, gravelly, undulating	748	1.0
WaC2	Waynesboro clay loam, 5 to 12 percent slopes, eroded	243	0.3
WaD2	Waynesboro clay loam, 12 to 20 percent slopes, eroded	676	0.9
W	Water	1,300	1.7
	Total	74,500	100.0

Table 5.--Land Capability and Yields per Acre of Crops and Pasture

(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	Alfalfa hay	Corn	Soybeans	Tall fescue-ladino	Tobacco	Wheat
		Tons	Bu	Bu	AUM*	Lbs	Bu
AmB:							
Armour	IIe	4.0	125	43	7.5	2,900	53
Ar:							
Arrington	IIw	---	130	40	7.5	---	55
BaC:							
Barfield	VIIs	---	---	---	---	---	---
Rock outcrop.							
BfC:							
Barfield	VIs	---	---	---	4.0	---	---
Rock outcrop.							
Ashwood	VIe	---	---	---	4.5	---	---
BfF:							
Barfield	VIIs	---	---	---	---	---	---
Rock outcrop.							
Ashwood	VIIe	---	---	---	---	---	---
BrB2:							
Bradyville	IIe	3.3	80	32	6.5	1,850	48
BrC2:							
Bradyville	IIIe	3.0	70	---	6.0	1,800	44
ByB:							
Byler	IIw	---	85	35	7.5	2,600	45
CpB:							
Capshaw	IIe	---	75	---	7.5	---	45
DeD2:							
Dellrose	IVe	---	70	25	5.5	1,700	30
DeE2:							
Dellrose	VIe	---	---	---	4.5	---	---
Ea:							
Eagleville	IIIw	---	60	35	5.0	---	---
Eg:							
Egam	IIw	---	110	40	7.5	---	50
HaC2:							
Hampshire	IIIe	---	75	32	5.5	2,200	40
HaD2:							
Hampshire	IVe	---	65	28	5.0	1,750	---
HD:							
Hapludults.							

See footnote at the end of the table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Soybeans	Tall fescue-ladino	Tobacco	Wheat
		Tons	Bu	Bu	AUM*	Lbs	Bu
HhB2:							
Harpeth	IIe	3.8	120	35	7.5	2,500	45
HhC2:							
Harpeth	IIIe	3.0	100	30	7.0	2,200	45
HoB2:							
Holston	IIe	---	90	25	6.5	2,150	40
HuB:							
Humphreys	IIe	3.0	85	32	6.0	2,150	48
InD2:							
Inman	VIs	---	---	---	3.0	---	---
InE2:							
Inman	VIIs	---	---	---	2.5	---	---
Ln:							
Lindell	IIw	---	110	40	7.5	1,700	50
Me:							
Melvin	IVw	---	---	---	2.0	---	---
MmC2:							
Mimosa	IVe	---	50	---	4.0	1,250	40
MmD2:							
Mimosa	VIe	---	---	---	3.5	---	---
MmD3:							
Mimosa	VIe	---	---	---	3.0	---	---
MmE2:							
Mimosa	VIIe	---	---	---	3.0	---	---
MnC2:							
Mimosa	VIs	---	---	---	2.5	---	---
MrE:							
Mimosa	VIIs	---	---	---	2.5	---	---
Rock outcrop.							
NeB2:							
Nesbitt	IIe	---	95	40	7.5	1,900	45
NeC2:							
Nesbitt	IIIe	2.7	85	---	7.0	1,800	40
Oc:							
Ocana	IIs	---	85	30	7.0	1,800	40
RtC:							
Rock outcrop.							
Talbott	VIIs	---	---	---	4.5	1,600	40
SgD2:							
Sugargrove	IVe	---	---	----	5.0	1,800	---

See footnote at the end of the table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Soybeans	Tall fescue-ladino	Tobacco	Wheat
		Tons	Bu	Bu	AUM*	Lbs	Bu
SUF:							
Sulphura----------------	VIIs	---	---	---	---	---	---
TbC:							
Talbott-----------------	IVs	---	---	---	4.5	1,600	40
UA:							
Udarents.							
UD:							
Udorthents.							
WaC2:							
Waynesboro--------------	IIIe	3.0	90	30	6.0	2,200	40
WaD2:							
Waynesboro--------------	IVe	2.5	75	20	5.5	1,750	35

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 6.--Woodland Management and Productivity

Map symbol and soil name	Management concerns					Potential productivity			Suggested trees to plant
	Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber	
								cu ft/ac	
AmB:									
Armour------------------	Slight	Slight	Slight	Slight	Moderate	Southern red oak----	78	60	Black walnut, yellow-poplar
						White oak-----------	78	60	
						Yellow-poplar-------	93	93	
Ar:									
Arrington---------------	Slight	Slight	Slight	Slight	Severe	Southern red oak----	80	62	Black walnut, yellow-poplar
						White oak-----------	80	62	
						Yellow-poplar-------	105	115	
BaC:									
Barfield----------------	Slight	Slight	Moderate	Severe	Moderate	Eastern redcedar----	35	37	Eastern redcedar
Rock outcrop.									
BfC:									
Barfield----------------	Slight	Slight	Moderate	Severe	Moderate	Eastern redcedar----	35	37	Eastern redcedar
Rock outcrop.									
Ashwood-----------------	Slight	Slight	Slight	Slight	Moderate	Eastern redcedar----	40	43	Eastern redcedar
						Loblolly pine-------	80	114	
						Southern red oak----	65	43	
BfF:									
Barfield----------------	Severe	Severe	Moderate	Severe	Moderate	Eastern redcedar----	35	37	Eastern redcedar
Rock outcrop.									
Ashwood-----------------	Severe	Severe	Slight	Slight	Moderate	Eastern redcedar----	40	43	Eastern redcedar
BrB2:									
Bradyville--------------	Slight	Slight	Slight	Slight	Moderate	Southern red oak----	70	52	Eastern white pine, yellow-poplar
						White oak-----------	70	52	
						Yellow-poplar-------	90	90	
BrC2:									
Bradyville--------------	Moderate	Slight	Slight	Slight	Moderate	Southern red oak----	70	52	Eastern white pine, yellow-poplar
						White oak-----------	70	52	
						Yellow-poplar-------	90	90	
ByB:									
Byler-------------------	Slight	Slight	Slight	Moderate	Moderate	White oak-----------	65	47	Black walnut, yellow-poplar
						Yellow-poplar-------	90	90	
CpB:									
Capshaw-----------------	Slight	Slight	Slight	Slight	---	Southern red oak----	70	52	Black walnut, yellow-poplar
						Yellow-poplar-------	90	90	
DeD2:									
Dellrose----------------	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak----	76	58	Eastern white pine, yellow-poplar
						Yellow-poplar-------	98	104	
DeE2:									
Dellrose----------------	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak----	76	58	Eastern white pine, yellow-poplar
						Yellow-poplar-------	98	104	

Table 6.--Woodland Management and Productivity--Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
								cu ft/ac	
Ea:									
Eagleville	Slight	Moderate	Moderate	Slight	Severe	Eastern cottonwood	100	128	Cherrybark oak,
						Sweetgum	90	106	yellow-poplar
						Water oak	90	86	
Eg:									
Egam	Slight	Slight	Moderate	Slight	Severe	Southern red oak	80	62	Black walnut,
						Water oak	90	86	yellow-poplar
						Yellow-poplar	100	107	
HaC2:									
Hampshire	Moderate	Slight	Slight	Slight	Moderate	Eastern redcedar	50	64	Eastern white pine,
						Southern red oak	70	52	yellow-poplar
HaD2:									
Hampshire	Severe	Moderate	Slight	Slight	Moderate	Eastern redcedar	50	64	Eastern white pine,
						Southern red oak	70	52	yellow-poplar
HD:									
Hapludults.									
HhB2:									
Harpeth	Slight	Slight	Slight	Slight	Moderate	Southern red oak	80	62	Black walnut,
						Yellow-poplar	95	98	yellow-poplar
HhC2:									
Harpeth	Slight	Slight	Slight	Slight	Moderate	Southern red oak	80	62	Black walnut,
						Yellow-poplar	95	98	yellow-poplar
HoB2:									
Holston	Slight	Slight	Slight	Slight	Moderate	Southern red oak	78	60	Black walnut,
						Yellow-poplar	90	90	yellow-poplar
HuB:									
Humphreys	Slight	Slight	Slight	Slight	Moderate	Southern red oak	70	52	Black walnut,
						Yellow-poplar	100	107	yellow-poplar
InD2:									
Inman	Moderate	Moderate	Moderate	Slight	Moderate	Eastern redcedar	50	64	Black locust,
						Southern red oak	60	43	eastern white pine
InE2:									
Inman	Moderate	Moderate	Moderate	Slight	Moderate	Eastern redcedar	50	64	Black locust,
						Southern red oak	60	43	eastern white pine
Ln:									
Lindell	Slight	Slight	Moderate	Slight	Severe	Southern red oak	80	62	Black walnut,
						Sweetgum	90	106	cherrybark oak,
						Yellow-poplar	100	107	sweetgum
Me:									
Melvin	Slight	Moderate	Moderate	Severe	Severe	Eastern cottonwood	100	128	American sycamore,
						Sweetgum	80	79	eastern cottonwood
MmC2:									
Mimosa	Slight	Slight	Slight	Slight	Moderate	Eastern redcedar	45	52	Eastern white pine
						Southern red oak	65	47	

Table 6.--Woodland Management and Productivity--Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
								cu ft/ac	
MmD2:									
Mimosa	Moderate	Moderate	Slight	Slight	Moderate	Eastern redcedar	45	52	Eastern white pine
						Southern red oak	65	47	
MmD3:									
Mimosa	Slight	Moderate	Severe	Slight	Moderate	Eastern redcedar	40	43	Eastern redcedar,
						Southern red oak	60	43	eastern white pine
MmE2:									
Mimosa	Moderate	Moderate	Slight	Slight	Moderate	Eastern redcedar	40	43	Eastern redcedar,
						Southern red oak	60	43	eastern white pine
MnC2:									
Mimosa	Slight	Slight	Slight	Slight	Moderate	Eastern redcedar	45	52	Eastern white pine
						Southern red oak	65	47	
MrE:									
Mimosa	Moderate	Moderate	Slight	Slight	Moderate	Eastern redcedar	45	52	Eastern redcedar,
						Southern red oak	65	47	eastern white pine
Rock outcrop.									
NeB2:									
Nesbitt	Slight	Slight	Slight	Slight	Moderate	Southern red oak	70	52	Black walnut,
						Sweetgum	80	79	eastern white pine
NeC2:									
Nesbitt	Moderate	Slight	Slight	Slight	Moderate	Southern red oak	70	52	Black walnut,
						Sweetgum	80	79	eastern white pine
Oc:									
Ocana	Slight	Slight	Slight	Slight	Severe	White oak	62	62	Black walnut,
						Yellow-poplar	100	107	yellow-poplar
RtC:									
Rock outcrop.									
Talbott	Slight	Slight	Slight	Slight	Moderate	Eastern redcedar	40	43	Eastern redcedar,
						Southern red oak	65	47	eastern white pine
SgD2:									
Sugargrove	Moderate	Moderate	Slight	Slight	Moderate	Virginia pine	55	80	Eastern white pine
						Southern red oak	66	48	
SUF:									
Sulphura	Severe	Severe	Moderate	Moderate	Moderate	Eastern redcedar	35	37	Eastern redcedar
						White oak	60	43	
TbC:									
Talbott	Slight	Slight	Slight	Slight	Moderate	Eastern redcedar	40	43	Eastern redcedar,
						Southern red oak	65	47	eastern white pine
UA:									
Udarents.									
UD:									
Udorthents.									

Table 6.--Woodland Management and Productivity--Continued

Map symbol and soil name	Management concerns					Potential productivity			Suggested trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume of wood fiber	
								cu ft/ac	
WaC2:									
Waynesboro	Slight	Slight	Slight	Slight	Moderate	Southern red oak	70	52	Eastern white pine
						Yellow-poplar	90	90	
WaD2:									
Waynesboro	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak	70	52	Eastern white pine
						Yellow-poplar	90	90	

Table 7.--Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AmB:					
Armour	Slight	Slight	Moderate: slope	Slight	Slight
Ar:					
Arrington	Severe: flooding	Slight	Moderate: flooding	Slight	Moderate: flooding
BaC:					
Barfield	Severe: depth to rock	Severe: depth to rock	Severe: slope depth to rock	Slight	Severe: depth to rock
Rock outcrop.					
BfC:					
Barfield	Severe: depth to rock	Severe: depth to rock	Severe: slope depth to rock	Slight	Severe: depth to rock
Rock outcrop.					
Ashwood	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: slope depth to rock
BfF:					
Barfield	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock
Rock outcrop.					
Ashwood	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
BrB2:					
Bradyville	Moderate: percs slowly	Moderate: percs slowly	Moderate: percs slowly slope small stones	Severe: erodes easily	Slight
BrC2:					
Bradyville	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope
ByB:					
Byler	Moderate: wetness	Moderate: percs slowly wetness	Moderate: slope wetness	Severe: erodes easily	Slight
CpB:					
Capshaw	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: slope wetness	Severe: erodes easily	Slight

Table 7.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DeD2:					
Dellrose	Severe: slope	Severe: slope	Severe: slope small stones	Moderate: slope	Severe: slope
DeE2:					
Dellrose	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope
Ea:					
Eagleville	Severe: flooding wetness	Moderate: wetness	Severe: wetness	Moderate: wetness	Moderate: flooding wetness
Eg:					
Egam	Severe: flooding	Moderate: percs slowly	Moderate: flooding percs slowly	Slight	Moderate: flooding
HaC2:					
Hampshire	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope
HaD2:					
Hampshire	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
HD:					
Hapludults.					
HhB2:					
Harpeth	Slight	Slight	Moderate: slope	Severe: erodes easily	Slight
HhC2:					
Harpeth	Slight	Slight	Severe: slope	Severe: erodes easily	Slight
HoB2:					
Holston	Slight	Slight	Moderate: slope small stones	Slight	Slight
HuB:					
Humphreys	Severe: flooding	Moderate: small stones	Severe: small stones	Slight	Moderate: small stones droughty
InD2:					
Inman	Severe: slope	Severe: slope	Severe: large stones slope	Moderate: large stones slope	Severe: large stones slope
InE2:					
Inman	Severe: slope	Severe: slope	Severe: large stones slope	Severe: slope	Severe: large stones slope

Table 7.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ln:					
Lindell----------------	Severe: flooding	Moderate: wetness	Moderate: flooding small stones wetness	Slight	Moderate: flooding
Me:					
Melvin-----------------	Severe: flooding wetness	Severe: wetness	Severe: flooding wetness	Severe: wetness	Severe: flooding wetness
MmC2:					
Mimosa-----------------	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: slope
MmD2:					
Mimosa-----------------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
MmD3:					
Mimosa-----------------	Severe: too clayey	Severe: too clayey	Severe: slope too clayey	Severe: too clayey	Severe: too clayey
MmE2:					
Mimosa-----------------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
MnC2:					
Mimosa-----------------	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: slope
MrE:					
Mimosa-----------------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Rock outcrop.					
NeB2:					
Nesbitt----------------	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: percs slowly slope wetness	Slight	Slight
NeC2:					
Nesbitt----------------	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Severe: slope	Slight	Slight
Oc:					
Ocana------------------	Severe: flooding	Moderate: small stones	Severe: small stones	Slight	Moderate: flooding large stones small stones
RtC:					
Rock outcrop.					
Talbott----------------	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: slope depth to rock

Table 7.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SgD2:					
Sugargrove	Severe: slope	Severe: slope	Severe: slope small stones	Moderate: slope	Severe: slope
SUF:					
Sulphura	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope
TbC:					
Talbott	Moderate: percs slowly	Moderate: percs slowly	Severe: slope	Slight	Moderate: depth to rock
UA:					
Udarents.					
UD:					
Udorthents.					
WaC2:					
Waynesboro	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
WaD2:					
Waynesboro	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope

Table 8.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AmB:											
Armour	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor
Ar:											
Arrington	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BaC:											
Barfield	Poor	Poor	Fair	Poor	Poor	---	Very poor	Very poor	Poor	Poor	Very poor
Rock outcrop.											
BfC:											
Barfield	Poor	Poor	Fair	Poor	Poor	---	Very poor	Very poor	Poor	Poor	Very poor
Rock outcrop.											
Ashwood	Fair	Good	Fair	Good	Good	---	Very poor	Very poor	Fair	Good	Very poor
BfF:											
Barfield	Poor	Poor	Fair	Poor	Poor	---	Very poor	Very poor	Poor	Poor	Very poor
Rock outcrop.											
Ashwood	Very poor	Fair	Poor	Good	Good	---	Very poor	Very poor	Poor	Good	Very poor
BrB2:											
Bradyville	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor
BrC2:											
Bradyville	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor
ByB:											
Byler	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
CpB:											
Capshaw	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
DeD2:											
Dellrose	Poor	Fair	Good	Good	Good	---	Very poor	Very poor	Fair	Good	Very poor
DeE2:											
Dellrose	Very poor	Fair	Good	Good	Good	---	Very poor	Very poor	Fair	Good	Very poor
Ea:											
Eagleville	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair

Table 8.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Eg:											
Egam	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
HaC2:											
Hampshire	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
HaD2:											
Hampshire	Poor	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
HD:											
Hapludults.											
HhB2:											
Harpeth	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HhC2:											
Harpeth	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
HoB2:											
Holston	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
HuB:											
Humphreys	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
InD2:											
Inman	Poor	Fair	Fair	Poor	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
InE2:											
Inman	Very poor	Fair	Fair	Poor	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Ln:											
Lindell	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Me:											
Melvin	Very poor	Poor	Poor	Poor	Poor	---	Good	Good	Poor	Poor	Good
MmC2:											
Mimosa	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor
MmD2:											
Mimosa	Poor	Fair	Good	Good	Good	---	Very poor	Very poor	Fair	Good	Very poor
MmD3:											
Mimosa	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor
MmE2:											
Mimosa	Very poor	Fair	Good	Good	Good	---	Very poor	Very poor	Fair	Good	Very poor

Table 8.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
MnC2:											
Mimosa	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor
MrE:											
Mimosa	Very poor	Fair	Good	Good	Good	---	Very poor	Very poor	Fair	Good	Very poor
Rock outcrop.											
NeB2:											
Nesbitt	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
NeC2:											
Nesbitt	Fair	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Oc:											
Ocana	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Poor
RtC:											
Rock outcrop.											
Talbott	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SgD2:											
Sugargrove	Poor	Fair	Good	Good	Good	---	Very poor	Very poor	Fair	Good	Very poor
SUF:											
Sulphura	Very poor	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
TbC:											
Talbott	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
UA:											
Udarents.											
UD:											
Udorthents.											
WaC2:											
Waynesboro	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
WaD2:											
Waynesboro	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 9.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AmB:						
Armour	Slight	Slight	Slight	Slight	Severe: low strength	Slight
Ar:						
Arrington	Moderate: flooding wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
BaC:						
Barfield	Severe: depth to rock	Severe: shrink-swell depth to rock	Severe: shrink-swell depth to rock	Severe: shrink-swell slope depth to rock	Severe: low strength shrink-swell depth to rock	Severe: depth to rock
Rock outcrop.						
BfC:						
Barfield	Severe: depth to rock	Severe: shrink-swell depth to rock	Severe: shrink-swell depth to rock	Severe: shrink-swell slope depth to rock	Severe: low strength shrink-swell depth to rock	Severe: depth to rock
Rock outcrop.						
Ashwood	Severe: depth to rock	Severe: shrink-swell	Severe: shrink-swell depth to rock	Severe: shrink-swell slope	Severe: low strength shrink-swell	Moderate: slope depth to rock
BfF:						
Barfield	Severe: slope depth to rock	Severe: shrink-swell slope depth to rock	Severe: shrink-swell slope depth to rock	Severe: shrink-swell slope depth to rock	Severe: low strength shrink-swell depth to rock	Severe: slope depth to rock
Rock outcrop.						
Ashwood	Severe: slope depth to rock	Severe: shrink-swell slope	Severe: shrink-swell slope depth to rock	Severe: shrink-swell slope	Severe: low strength shrink-swell slope	Severe: slope
BrB2:						
Bradyville	Moderate: too clayey depth to rock	Moderate: shrink-swell	Moderate: shrink-swell depth to rock	Moderate: shrink-swell	Severe: low strength	Slight
BrC2:						
Bradyville	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength	Moderate: slope
ByB:						
Byler	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: wetness	Moderate: low strength wetness	Slight

Table 9.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CpB: Capshaw	Severe: wetness	Moderate: shrink-swell wetness	Moderate: shrink-swell wetness depth to rock	Moderate: shrink-swell slope wetness	Severe: low strength	Slight
DeD2: Dellrose	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
DeE2: Dellrose	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ea: Eagleville	Severe: wetness depth to rock	Severe: flooding shrink-swell wetness	Severe: flooding wetness depth to rock	Severe: flooding shrink-swell wetness	Severe: flooding low strength shrink-swell	Moderate: flooding wetness
Eg: Egam	Moderate: flooding too clayey wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding low strength	Moderate: flooding
HaC2: Hampshire	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength	Moderate: slope
HaD2: Hampshire	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: slope
HD: Hapludults.						
HhB2: Harpeth	Moderate: too clayey	Slight	Slight	Slight	Severe: low strength	Slight
HhC2: Harpeth	Moderate: too clayey	Slight	Slight	Moderate: slope	Severe: low strength	Slight
HoB2: Holston	Slight	Slight	Slight	Moderate: slope	Slight	Slight
HuB: Humphreys	Moderate: wetness	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding	Moderate: small stones droughty
InD2: Inman	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: large stones slope

Table 9.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
InE2: Inman	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: large stones slope
Ln: Lindell	Severe: wetness	Severe: flooding	Severe: flooding wetness	Severe: flooding	Severe: flooding	Moderate: flooding
Me: Melvin	Severe: wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding low strength wetness	Severe: flooding wetness
MmC2: Mimosa	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength	Moderate: slope
MmD2: Mimosa	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: slope
MmD3: Mimosa	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: too clayey
MmE2: Mimosa	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: slope
MnC2: Mimosa	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength	Moderate: slope
MrE: Mimosa	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: slope
Rock outcrop.						
NeB2: Nesbitt	Moderate: wetness	Moderate: wetness	Moderate: wetness	Moderate: slope wetness	Severe: low strength	Slight
NeC2: Nesbitt	Moderate: wetness	Moderate: wetness	Moderate: wetness	Moderate: slope wetness	Severe: low strength	Slight

Table 9.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Oc:						
Ocana	Moderate: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding large stones small stones
RtC:						
Rock outcrop.						
Talbott	Severe: depth to rock	Moderate: shrink-swell slope depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength	Moderate: slope depth to rock
SgD2:						
Sugargrove	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SUF:						
Sulphura	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
TbC:						
Talbott	Severe: depth to rock	Moderate: shrink-swell depth to rock	Severe: depth to rock	Moderate: shrink-swell slope depth to rock	Severe: low strength	Moderate: depth to rock
UA:						
Udarents.						
UD:						
Udorthents.						
WaC2:						
Waynesboro	Moderate: slope too clayey	Moderate: slope	Moderate: slope	Severe: slope	Moderate: low strength slope	Moderate: slope
WaD2:						
Waynesboro	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope

Table 10.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AmB:					
Armour	Slight	Moderate: seepage slope	Moderate: too clayey	Slight	Fair: thin layer too clayey
Ar:					
Arrington	Severe: flooding	Severe: flooding	Severe: flooding wetness	Severe: flooding	Good
BaC:					
Barfield	Severe: depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
Rock outcrop.					
BfC:					
Barfield	Severe: depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
Rock outcrop.					
Ashwood	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
BfF:					
Barfield	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
Rock outcrop.					
Ashwood	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
BrB2:					
Bradyville	Severe: percs slowly	Moderate: seepage slope depth to rock	Severe: too clayey depth to rock	Moderate: depth to rock	Poor: hard to pack too clayey
BrC2:					
Bradyville	Severe: percs slowly	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey

Table 10.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ByB:					
Byler	Severe: percs slowly wetness	Moderate: seepage slope	Moderate: wetness	Moderate: wetness	Fair: small stones too clayey
CpB:					
Capshaw	Severe: percs slowly wetness	Moderate: slope	Severe: too clayey wetness	Severe: wetness	Poor: hard to pack too clayey
DeD2:					
Dellrose	Severe: slope	Severe: seepage slope	Severe: slope	Severe: seepage slope	Poor: slope small stones
DeE2:					
Dellrose	Severe: slope	Severe: seepage slope	Severe: slope	Severe: seepage slope	Poor: slope small stones
Ea:					
Eagleville	Severe: flooding wetness depth to rock	Severe: flooding depth to rock	Severe: flooding wetness depth to rock	Severe: flooding wetness depth to rock	Poor: hard to pack too clayey depth to rock
Eg:					
Egam	Severe: flooding percs slowly wetness	Severe: flooding wetness	Severe: flooding too clayey wetness	Severe: flooding wetness	Poor: hard to pack too clayey
HaC2:					
Hampshire	Severe: percs slowly	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey
HaD2:					
Hampshire	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack slope too clayey
HD:					
Hapludults.					
HhB2:					
Harpeth	Slight	Moderate: seepage slope	Moderate: too clayey	Slight	Fair: thin layer too clayey
HhC2:					
Harpeth	Moderate: slope	Severe: slope	Moderate: too clayey	Slight	Fair: thin layer too clayey
HoB2:					
Holston	Slight	Moderate: seepage slope	Moderate: too clayey	Slight	Fair: small stones too clayey

Table 10.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HuB:					
Humphreys	Moderate: flooding wetness	Severe: seepage	Severe: seepage wetness	Severe: seepage	Poor: small stones
InD2:					
Inman	Severe: percs slowly slope depth to rock	Severe: large stones slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
InE2:					
Inman	Severe: percs slowly slope depth to rock	Severe: large stones slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
Ln:					
Lindell	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Fair: small stones too clayey wetness
Me:					
Melvin	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Poor: wetness
MmC2:					
Mimosa	Severe: percs slowly	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey
MmD2:					
Mimosa	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack slope too clayey
MmD3:					
Mimosa	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack slope too clayey
MmE2:					
Mimosa	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack slope too clayey
MnC2:					
Mimosa	Severe: percs slowly	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey
MrE:					
Mimosa	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack slope too clayey

Table 10.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MrE:					
Rock outcrop.					
NeB2:					
Nesbitt	Severe: wetness	Severe: wetness	Moderate: too clayey, wetness	Moderate: wetness	Fair: too clayey, wetness
NeC2:					
Nesbitt	Severe: wetness	Severe: slope, wetness	Moderate: too clayey, wetness	Moderate: wetness	Fair: too clayey, wetness
Oc:					
Ocana	Severe: flooding	Severe: flooding, seepage	Severe: flooding, seepage	Severe: flooding, seepage	Poor: small stones
RtC:					
Rock outcrop.					
Talbott	Severe: percs slowly, depth to rock	Severe: slope, depth to rock	Severe: too clayey, depth to rock	Severe: depth to rock	Poor: hard to pack, too clayey, depth to rock
SgD2:					
Sugargrove	Severe: slope	Severe: seepage, slope	Severe: seepage, slope, depth to rock	Severe: seepage, slope	Poor: slope, small stones
SUF:					
Sulphura	Severe: slope, depth to rock	Severe: seepage, slope, depth to rock	Severe: seepage, slope, depth to rock	Severe: seepage, slope, depth to rock	Poor: slope, small stones, depth to rock
TbC:					
Talbott	Severe: percs slowly, depth to rock	Severe: depth to rock	Severe: too clayey, depth to rock	Severe: depth to rock	Poor: hard to pack, too clayey, depth to rock
UA:					
Udarents.					
UD:					
Udorthents.					
WaC2:					
Waynesboro	Moderate: percs slowly, slope	Severe: slope	Moderate: slope, too clayey	Moderate: slope	Fair: hard to pack, slope, too clayey
WaD2:					
Waynesboro	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope

Table 11.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AmB:				
Armour	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Ar:				
Arrington	Fair: low strength thin layer	Improbable: excess fines	Improbable: excess fines	Good
BaC:				
Barfield	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones too clayey depth to rock
Rock outcrop.				
BfC:				
Barfield	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones too clayey depth to rock
Rock outcrop.				
Ashwood	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
BfF:				
Barfield	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones too clayey depth to rock
Rock outcrop.				
Ashwood	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey
BrB2:				
Bradyville	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
BrC2:				
Bradyville	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
ByB:				
Byler	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim too clayey
CpB:				
Capshaw	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey

Table 11.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
DeD2:				
Dellrose----------------	Fair: slope thin layer	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
DeE2:				
Dellrose----------------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
Ea:				
Eagleville--------------	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
Eg:				
Egam--------------------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
HaC2:				
Hampshire---------------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim too clayey
HaD2:				
Hampshire---------------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope too clayey
HD:				
Hapludults.				
HhB2:				
Harpeth-----------------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
HhC2:				
Harpeth-----------------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
HoB2:				
Holston-----------------	Good	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
HuB:				
Humphreys---------------	Good	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
InD2:				
Inman-------------------	Poor: low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: large stones slope too clayey

Table 11.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
InE2:				
Inman	Poor: low strength slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: large stones slope too clayey
Ln:				
Lindell	Fair: low strength wetness	Improbable: excess fines	Improbable: excess fines	Good
Me:				
Melvin	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
MmC2:				
Mimosa	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
MmD2:				
Mimosa	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey
MmD3:				
Mimosa	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
MmE2:				
Mimosa	Poor: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey
MnC2:				
Mimosa	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
MrE:				
Mimosa	Poor: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey
Rock outcrop.				
NeB2:				
Nesbitt	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
NeC2:				
Nesbitt	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Oc:				
Ocana	Fair: thin layer depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
RtC:				
Rock outcrop.				

Table 11.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
RtC:				
Talbott	Poor: low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
SgD2:				
Sugargrove	Fair: slope thin layer depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
SUF:				
Sulphura	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
TbC:				
Talbott	Poor: low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
UA: Udarents.				
UD: Udorthents.				
WaC2:				
Waynesboro	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
WaD2:				
Waynesboro	Fair: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey

Table 12.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
AmB:							
Armour	Moderate: seepage slope	Moderate: piping	Severe: no water	Limitation: deep to water	Limitations: erodes easily slope	Limitation: erodes easily	Limitation: erodes easily
Ar:							
Arrington	Moderate: seepage	Severe: piping	Moderate: slow refill deep to water	Limitation: deep to water	Limitations: erodes easily flooding	Limitation: erodes easily	Limitation: erodes easily
BaC:							
Barfield	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: slope droughty	Limitations: slope depth to rock	Limitations: slope depth to rock droughty
Rock outcrop.							
BfC:							
Barfield	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: slope droughty	Limitations: slope depth to rock	Limitations: slope depth to rock droughty
Rock outcrop.							
Ashwood	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: slope depth to rock	Limitations: slope depth to rock	Limitations: slope depth to rock
BfF:							
Barfield	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: slope droughty	Limitations: slope depth to rock	Limitations: slope depth to rock droughty
Rock outcrop.							
Ashwood	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: slope depth to rock	Limitations: slope depth to rock	Limitations: slope depth to rock
BrB2:							
Bradyville	Moderate: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: erodes easily slope	Limitation: erodes easily	Limitation: erodes easily
BrC2:							
Bradyville	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: erodes easily slope	Limitations: erodes easily slope	Limitations: erodes easily slope
ByB:							
Byler	Moderate: seepage	Severe: piping	Severe: no water	Limitation: percs slowly	Limitations: percs slowly wetness	Limitations: erodes easily wetness	Limitations: erodes easily rooting depth

Table 12.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
CpB: Capshaw----------	Moderate: slope	Severe: hard to pack	Severe: slow refill	Limitations: percs slowly slope	Limitations: percs slowly slope wetness	Limitations: erodes easily wetness	Limitations: erodes easily percs slowly
DeD2: Dellrose---------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
DeE2: Dellrose---------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
Ea: Eagleville-------	Moderate: depth to rock	Severe: hard to pack	Severe: no water	Limitations: flooding percs slowly depth to rock	Limitations: percs slowly wetness	Limitations: wetness depth to rock	Limitations: wetness depth to rock
Eg: Egam-------------	Slight	Moderate: hard to pack thin layer wetness	Severe: slow refill	Limitation: flooding	Limitations: flooding wetness	Limitation: wetness	Favorable
HaC2: Hampshire--------	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: erodes easily slope	Limitations: erodes easily slope	Limitations: erodes easily slope
HaD2: Hampshire--------	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: erodes easily slope	Limitations: erodes easily slope	Limitations: erodes easily slope
HD: Hapludults.							
HhB2: Harpeth----------	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitations: erodes easily slope	Limitation: erodes easily	Limitation: erodes easily
HhC2: Harpeth----------	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitations: erodes easily slope	Limitation: erodes easily	Limitation: erodes easily
HoB2: Holston----------	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Favorable	Favorable
HuB: Humphreys--------	Severe: seepage	Moderate: piping	Severe: no water	Limitation: deep to water	Limitations: slope droughty	Favorable	Limitation: droughty

Table 12.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
InD2: Inman	Severe: slope	Severe: hard to pack large stones	Severe: no water	Limitation: deep to water	Limitations: large stones slope droughty	Limitations: large stones slope depth to rock	Limitations: large stones slope droughty
InE2: Inman	Severe: slope	Severe: hard to pack large stones	Severe: no water	Limitation: deep to water	Limitations: large stones slope droughty	Limitations: large stones slope depth to rock	Limitations: large stones slope droughty
Ln: Lindell	Moderate: seepage	Severe: piping	Moderate: slow refill deep to water	Limitation: flooding	Limitations: flooding wetness	Limitation: wetness	Favorable
Me: Melvin	Moderate: seepage	Severe: piping wetness	Moderate: slow refill	Limitation: flooding	Limitations: erodes easily flooding wetness	Limitations: erodes easily wetness	Limitations: erodes easily wetness
MmC2: Mimosa	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: percs slowly slope	Limitations: erodes easily percs slowly slope	Limitations: erodes easily percs slowly slope
MmD2: Mimosa	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: percs slowly slope	Limitations: erodes easily percs slowly slope	Limitations: erodes easily percs slowly slope
MmD3: Mimosa	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: percs slowly slope slow intake	Limitations: percs slowly slope	Limitations: percs slowly slope
MmE2: Mimosa	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: percs slowly slope	Limitations: erodes easily percs slowly slope	Limitations: erodes easily percs slowly slope
MnC2: Mimosa	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: percs slowly slope	Limitations: erodes easily percs slowly slope	Limitations: erodes easily percs slowly slope
MrE: Mimosa	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: percs slowly slope	Limitations: erodes easily percs slowly slope	Limitations: erodes easily percs slowly slope
Rock outcrop.							

Table 12.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
NeB2: Nesbitt	Moderate: seepage slope	Moderate: piping thin layer wetness	Severe: no water	Limitation: slope	Limitations: erodes easily slope wetness	Limitations: erodes easily wetness	Limitation: erodes easily
NeC2: Nesbitt	Moderate: seepage slope	Moderate: piping thin layer wetness	Severe: no water	Limitation: slope	Limitations: erodes easily slope wetness	Limitations: erodes easily wetness	Limitation: erodes easily
Oc: Ocana	Severe: seepage	Moderate: piping thin layer	Severe: no water	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
RtC: Rock outcrop.							
Talbott	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: slope depth to rock	Limitations: erodes easily slope depth to rock	Limitations: erodes easily slope depth to rock
SgD2: Sugargrove	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitations: large stones slope	Limitations: large stones slope
SUF: Sulphura	Severe: seepage slope	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitations: slope depth to rock droughty	Limitations: large stones slope depth to rock	Limitations: large stones slope droughty
TbC: Talbott	Moderate: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitations: slope depth to rock	Limitations: erodes easily depth to rock	Limitations: erodes easily depth to rock
UA: Udarents.							
UD: Udorthents.							
WaC2: Waynesboro	Severe: slope	Severe: hard to pack piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
WaD2: Waynesboro	Severe: slope	Severe: hard to pack piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope

Table 13.--Engineering Index 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	
AmB:												
Armour----------	0-11	Silt loam	CL-ML, CL, ML	A-4	0	0	90-100	80-100	75-95	70-90	25-35	5-10
	11-60	Silty clay loam, silt loam	CL	A-4, A-6	0	0	90-100	80-100	75-95	70-95	30-40	8-18
Ar:												
Arrington-------	0-31	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	90-100	85-95	75-95	25-40	4-15
	31-60	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-100	75-95	25-40	4-15
BaC:												
Barfield--------	0-6	Silty clay loam	CH, MH, CL	A-6, A-7	0-5	0-10	90-100	85-95	80-90	75-85	35-65	12-35
	6-18	Clay, silty clay	CL, CH, MH	A-6, A-7	0-5	0-15	70-100	65-90	60-85	55-80	35-70	14-40
	18-28	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
BfC:												
Barfield--------	0-6	Silty clay loam	CH, CL, MH	A-6, A-7	0-5	0-10	90-100	85-95	80-90	75-85	35-65	12-35
	6-18	Clay, silty clay	CH, MH, CL	A-6, A-7	0-5	0-15	70-100	65-90	60-85	55-80	35-70	14-40
	18-28	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
Ashwood---------	0-5	Silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0-15	95-100	90-100	85-100	70-95	25-49	6-22
	5-28	Clay, silty clay	MH	A-7	0	0-15	95-100	90-100	85-100	75-95	51-75	20-40
	28-38	Unweathered bedrock			---	---	---	---	---	---	---	---
BfF:												
Barfield--------	0-6	Silty clay loam	CL, CH, MH	A-6, A-7	0-5	0-10	90-100	85-95	80-90	75-85	35-65	12-35
	6-18	Clay, silty clay	CH, CL, MH	A-6, A-7	0-5	0-15	70-100	65-90	60-85	55-80	35-70	14-40
	18-28	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
Ashwood---------	0-5	Silty clay loam	CL, CL-ML	A-6, A-4, A-7	0	0-15	95-100	90-100	85-100	70-95	25-49	6-22
	5-28	Clay, silty clay	MH	A-7	0	0-15	95-100	90-100	85-100	75-95	51-75	20-40
	28-38	Unweathered bedrock			---	---	---	---	---	---	---	---
BrB2:												
Bradyville------	0-7	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-5	80-100	75-100	70-95	65-90	15-35	3-15
	7-15	Silty clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	70-90	65-90	32-45	12-22
	15-53	Silty clay, clay	CH, MH	A-7	0	0-5	80-100	75-100	65-90	60-85	52-70	26-40
	53-55	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 13.--Engineering Index 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	
BrC2:												
Bradyville------	0-7	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-5	80-100	75-100	70-95	65-90	15-35	3-15
	7-15	Silty clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	70-90	65-90	32-45	12-22
	15-53	Silty clay, clay	CH, MH	A-7	0	0-5	80-100	75-100	65-90	60-85	52-70	26-40
	53-55	Unweathered bedrock			---	---	---	---	---	---	---	---
ByB:												
Byler-----------	0-9	Silt loam	CL-ML, CL, ML	A-4	0	0	100	95-100	85-95	75-90	20-30	3-10
	9-22	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	85-100	85-95	20-40	3-15
	22-42	Silty clay loam, silt loam	CL, ML	A-4, A-7, A-6	0	0-5	80-100	75-100	70-100	60-95	30-45	8-20
	42-60	Clay, silty clay	MH, ML	A-7	0	0-10	65-100	60-100	55-95	50-90	40-60	12-25
CpB:												
Capshaw---------	0-9	Silt loam	CL, ML, CL-ML	A-4	0	0	90-100	85-100	80-95	75-85	18-30	3-10
	9-18	Silty clay loam, silty clay	CL, ML	A-6, A-7	0	0	90-100	85-100	80-95	75-85	30-45	11-20
	18-41	Clay, silty clay	CH, MH, CL	A-7	0	0	90-100	85-100	80-95	75-90	41-68	18-36
	41-60	Clay, silty clay loam, clay loam	CL, CH, MH	A-7	---	0-3	85-100	80-100	75-95	70-90	41-68	18-36
DeD2:												
Dellrose--------	0-11	Gravelly silt loam	CL-ML, CL, GC, SC	A-4, A-6	0	0-10	55-90	55-85	45-75	40-70	20-35	5-15
	11-60	Gravelly silty clay loam, gravelly silt loam	GC, CL, ML, SC	A-4, A-7, A-6	0	0-15	60-90	55-90	50-75	40-70	30-45	8-18
DeE2:												
Dellrose--------	0-11	Gravelly silt loam	CL-ML, CL, GC, SC	A-4, A-6	0	0-10	55-90	55-85	45-75	40-70	20-35	5-15
	11-60	Gravelly silty clay loam, gravelly silt loam	GC, ML, CL, SC	A-4, A-6, A-7	0	0-15	60-90	55-90	50-75	40-70	30-45	8-18
Ea:												
Eagleville------	0-6	Silty clay loam	CH, CL	A-6, A-7	0	0	80-100	75-100	70-100	65-95	35-55	15-28
	6-37	Clay, silty clay	CH	A-7	0	0	80-100	75-100	70-100	65-95	52-70	28-43
	37-47	Unweathered bedrock			---	---	---	---	---	---	---	---
Eg:												
Egam------------	0-8	Silt loam	CL, ML, CL-ML	A-4, A-6, A-7	0	0	95-100	95-100	85-100	75-95	21-45	4-20
	8-22	Silty clay, silty clay loam, clay	CH, CL	A-6, A-7	0	0	95-100	95-100	90-100	85-95	38-60	15-30
	22-60	Clay, silty clay	CH, CL, ML	A-4, A-6, A-7	0	0	95-100	95-100	90-100	70-95	25-60	8-30

Table 13.--Engineering Index 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	Plas- ticity index
	In				Pct	Pct					Pct	
HaC2:												
Hampshire-------	0-9	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-90	20-40	3-20
	9-36	Clay, silty clay	CL, CH, MH	A-7	0	0-3	80-100	75-100	65-95	55-85	45-65	21-38
	36-49	Very channery loam, very channery clay loam	GC, GM, CL, SC	A-2, A-6, A-7	0-5	10-50	55-75	50-75	40-70	30-60	30-48	11-25
	49-60	Weathered bedrock			---	---	---	---	---	---	---	---
HaD2:												
Hampshire-------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-90	20-40	3-20
	9-36	Clay, silty clay	CH, MH, CL	A-7	0	0-3	80-100	75-100	65-95	55-85	45-65	21-38
	36-49	Very channery loam, very channery clay loam	GC, CL, GM, SC	A-2, A-6, A-7	0-5	10-50	55-75	50-75	40-70	30-60	30-48	11-25
	49-60	Weathered bedrock			---	---	---	---	---	---	---	---
HD:												
Hapludults.												
HhB2:												
Harpeth---------	0-9	Silt loam	CL-ML, CL, ML	A-4	0	0	100	95-100	90-100	80-90	20-30	3-10
	9-47	Silt loam, silty clay loam	CL, ML	A-4, A-6	0	0	100	95-100	90-95	85-95	30-40	8-17
	47-60	Silty clay loam, clay, clay loam	CH, CL, ML, MH	A-7	0	0	90-100	85-100	75-95	60-85	40-55	15-25
HhC2:												
Harpeth---------	0-9	Silt loam	CL, CL-ML, ML	A-4	0	0	100	95-100	90-100	80-90	20-30	3-10
	9-47	Silt loam, silty clay loam	CL, ML	A-4, A-6	0	0	100	95-100	90-95	85-95	30-40	8-17
	47-60	Silty clay loam, clay, clay loam	CH, CL, ML, MH	A-7	0	0	90-100	85-100	75-95	60-85	40-55	15-25
HoB2:												
Holston---------	0-9	Loam	ML, CL-ML, SC-SM, SM	A-2, A-4	0	0-5	80-100	75-100	65-100	30-75	0-22	NP-6
	9-60	Loam, clay loam, sandy clay loam	ML, CL-ML, SC-SM, SM	A-2, A-4	0	0-5	80-100	75-100	50-100	30-80	21-33	3-10
HuB:												
Humphreys-------	0-8	Gravelly silt loam	CL-ML, GC-GM, CL, ML	A-4	0	0-5	60-75	55-75	50-70	35-55	18-28	3-10
	8-36	Gravelly silty clay loam, gravelly silt loam	CL, GC, SC	A-6	0	0-5	55-75	50-75	45-70	40-60	28-40	10-16
	36-60	Gravelly silty clay loam, gravelly clay loam, gravelly silt loam	CL, SC, GC	A-2, A-6, A-4	0	0-10	45-75	40-75	30-65	20-55	25-35	8-15

Table 13.--Engineering Index 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	
InD2:												
Inman----------	0-5	Flaggy silty clay loam	CL	A-6, A-7	---	20-50	95-100	90-100	85-95	70-90	28-45	10-20
	5-33	Flaggy silty clay, flaggy clay	CH, CL, MH	A-6, A-7	---	20-50	95-100	90-100	85-95	75-95	38-60	16-30
	33-43	Weathered bedrock			---	---	---	---	---	---	---	---
InE2:												
Inman----------	0-5	Flaggy silty clay loam	CL	A-6,.A-7	---	20-50	95-100	90-100	85-95	70-90	28-45	10-20
	5-33	Flaggy silty clay, flaggy clay	CL, CH, MH	A-6, A-7	---	20-50	95-100	90-100	85-95	75-95	38-60	16-30
	33-43	Weathered bedrock			---	---	---	---	---	---	---	---
Ln:												
Lindell---------	0-15	Silt loam	CL, CL-ML, ML	A-4	0	0	90-100	75-100	65-90	55-80	18-30	3-10
	15-60	Silt loam, silty clay loam, loam	CL, CL-ML	A-4, A-6	---	0-2	90-100	75-95	65-90	55-80	23-39	6-18
Me:												
Melvin----------	0-6	Silt loam	CL-ML, CL, ML	A-4	0	0	95-100	90-100	80-100	80-95	25-35	4-10
	6-60	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	80-98	25-40	5-20
MmC2:												
Mimosa----------	0-7	Silt loam	CL, ML	A-4, A-7, A-6	0	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-11	Silty clay loam, silty clay, clay	CL, CH, MH, ML	A-7	0	0	95-100	90-100	85-95	80-90	45-60	18-28
	11-53	Clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	53-63	Unweathered bedrock			---	---	---	---	---	---	---	---
MmD2:												
Mimosa----------	0-7	Silt loam	CL, ML	A-6, A-4, A-7	0	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-11	Silty clay loam, silty clay, clay	CH, ML, CL, MH	A-7	0	0	95-100	90-100	85-95	80-90	45-60	18-28
	11-53	Clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	53-63	Unweathered bedrock			---	---	---	---	---	---	---	---
MmD3:												
Mimosa----------	0-2	Silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	75-90	51-65	25-35
	2-47	Clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	47-57	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MmE2:												
Mimosa----------	0-7	Silt loam	CL, ML	A-4, A-7, A-6	0	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-11	Silty clay loam, silty clay, clay	CH, CL, ML, MH	A-7	0	0	95-100	90-100	85-95	80-90	45-60	18-28
	11-53	Clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	53-63	Unweathered bedrock			---	---	---	---	---	---	---	---
MnC2:												
Mimosa----------	0-7	Silt loam	CL, ML	A-4, A-6, A-7	0	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-11	Silty clay loam, silty clay, clay	CH, CL, ML, MH	A-7	0	0	95-100	90-100	85-95	80-90	45-60	18-28
	11-53	Clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	53-63	Unweathered bedrock			---	---	---	---	---	---	---	---
MrE:												
Mimosa----------	0-5	Silt loam	CL, ML	A-6, A-4, A-7	0	0	80-100	75-100	65-95	60-90	25-45	7-20
	5-45	Clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	45-55	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
NeB2:												
Nesbitt---------	0-7	Silt loam	CL, CL-ML, ML	A-4	0	0	100	95-100	80-95	75-90	15-30	3-10
	7-32	Silt loam, silty clay loam	CL, ML	A-6, A-7	0	0	100	95-100	85-100	85-95	30-45	10-20
	32-60	Silty clay loam	CL, ML	A-6, A-7	0	0	100	95-100	80-95	75-95	30-45	10-20
NeC2:												
Nesbitt---------	0-7	Silt loam	CL, CL-ML, ML	A-4	0	0	100	95-100	80-95	75-90	15-30	3-10
	7-32	Silty clay loam	CL, ML	A-6, A-7	0	0	100	95-100	85-100	85-95	30-45	10-20
	32-60	Silt loam, silty clay loam	CL, ML	A-6, A-7	0	0	100	95-100	80-95	75-95	30-45	10-20
Oc:												
Ocana-----------	0-8	Gravelly silt loam	CL-ML, CL, GM, SM	A-4, A-6	0	0-8	65-80	60-75	50-70	36-65	20-35	3-12
	8-60	Gravelly silt loam, very gravelly silt loam	GC, GC-GM, CL, GM	A-4, A-2, A-6	0	0-8	60-80	55-75	45-65	30-55	20-40	3-18
RtC:												
Rock outcrop.												
Talbott---------	0-6	Silt loam	CL	A-4, A-6	0	0-5	95-100	90-100	85-95	75-95	25-40	8-16
	6-28	Clay, silty clay	CH, CL	A-7	0	0-10	95-100	90-100	85-95	80-95	41-80	20-45

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
SgD2:												
Sugargrove------	0-12	Gravelly silt loam	CL-ML, CL, GM, ML	A-4	0	0-10	65-85	55-80	45-75	40-75	25-35	4-10
	12-32	Gravelly silt loam, gravelly silty clay loam, channery silty clay loam	CL-ML, CL, GC-GM	A-4, A-6	0	0-15	65-85	55-80	45-75	40-70	25-40	6-20
	32-41	Gravelly silty clay loam, very gravelly silty clay loam, very gravelly silty clay	CL, CL-ML, GC-GM	A-4, A-6	0	0-25	55-85	55-80	45-75	35-70	25-40	6-20
	41-49	Weathered bedrock			---	---	---	---	---	---	---	---
	49-59	Unweathered bedrock			---	---	---	---	---	---	---	---
SUF:												
Sulphura--------	0-3	Channery silt loam	CL, ML, CL-ML	A-4	0	0-8	70-90	65-85	60-80	55-75	20-32	2-10
	3-36	Very channery silt loam, very channery silty clay loam, channery loam	GC, GC-GM	A-4, A-2, A-6	0	5-20	45-60	40-55	35-50	30-45	23-32	6-12
	36-46	Unweathered bedrock			---	---	---	---	---	---	---	---
TbC:												
Talbott---------	0-6	Silt loam	CL	A-4, A-6	0	0-5	95-100	90-100	85-95	75-95	25-40	8-16
	6-28	Clay, silty clay	CH, CL	A-7	0	0-10	95-100	90-100	85-95	80-95	41-80	20-45
UA:												
Udarents.												
UD:												
Udorthents.												
WaC2:												
Waynesboro------	0-5	Clay loam	CL-ML, CL, ML, SM	A-4	0	0-5	85-100	80-100	70-95	43-70	18-30	2-9
	5-15	Clay loam, loam, sandy clay loam	CL, SC	A-6, A-4, A-7	0	0-5	90-100	85-100	75-95	45-75	30-41	9-17
	15-60	Clay loam, sandy clay, clay	CL, ML, MH	A-6, A-4, A-7	0	0-5	90-100	80-100	70-98	55-75	35-68	9-32

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
WaD2:												
Waynesboro------	0-5	Clay loam	CL-ML, CL, ML, SM	A-4	0	0-5	85-100	80-100	70-95	43-70	18-30	2-9
	5-15	Clay loam, loam, sandy clay loam	CL, SC	A-4, A-6, A-7	0	0-5	90-100	85-100	75-95	45-75	30-41	9-17
	15-60	Clay loam, sandy clay, clay	CL, ML, MH	A-4, A-6, A-7	0	0-5	90-100	80-100	70-98	55-75	35-68	9-32

Table 14.--Physical 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	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors		
								Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
AmB:										
Armour------------------	0-11	15-27	1.30-1.45	0.60-2.00	0.18-0.23	0.0-2.9	1.0-3.0	.43	.43	5
	11-60	22-35	1.30-1.50	0.60-2.00	0.17-0.20	0.0-2.9	0.0-0.5	.37	.37	
Ar:										
Arrington---------------	0-31	18-35	1.30-1.45	0.60-2.00	0.19-0.22	0.0-2.9	2.0-4.0	.37	.37	5
	31-60	18-35	1.30-1.45	0.60-2.00	0.19-0.22	0.0-2.9	0.5-2.0	.37	.37	
BaC:										
Barfield----------------	0-6	35-55	1.30-1.50	0.20-0.60	0.10-0.15	3.0-5.9	2.0-4.0	.24	.24	1
	6-18	35-55	1.30-1.50	0.20-0.60	0.09-0.14	6.0-8.9	1.0-3.0	.17	.20	
	18-28	---	---	---	---	---	---	---	---	
Rock outcrop.										
BfC:										
Barfield----------------	0-6	35-55	1.30-1.50	0.20-0.60	0.10-0.15	3.0-5.9	2.0-4.0	.24	.24	1
	6-18	35-55	1.30-1.50	0.20-0.60	0.09-0.14	6.0-8.9	1.0-3.0	.17	.20	
	18-28	---	---	---	---	---	---	---	---	
Rock outcrop.										
Ashwood-----------------	0-5	22-40	1.20-1.40	0.60-2.00	0.14-0.18	3.0-5.9	2.0-5.0	.28	.32	2
	5-28	40-60	1.30-1.45	0.20-0.60	0.12-0.15	6.0-8.9	1.0-2.0	.24	.24	
	28-38	---	---	0.00-0.06	---	---	---	---	---	
BfF:										
Barfield----------------	0-6	35-55	1.30-1.50	0.20-0.60	0.10-0.15	3.0-5.9	2.0-4.0	.24	.24	1
	6-18	35-55	1.30-1.50	0.20-0.60	0.09-0.14	6.0-8.9	1.0-3.0	.17	.20	
	18-28	---	---	---	---	---	---	---	---	
Rock outcrop.										
Ashwood-----------------	0-5	22-40	1.20-1.40	0.60-2.00	0.14-0.18	3.0-5.9	2.0-5.0	.28	.32	2
	5-28	40-60	1.30-1.45	0.20-0.60	0.12-0.15	6.0-8.9	1.0-2.0	.24	.24	
	28-38	---	---	---	---	---	---	---	---	
BrB2:										
Bradyville--------------	0-7	18-27	1.40-1.55	0.60-2.00	0.18-0.22	0.0-2.9	0.5-2.0	.43	.43	3
	7-15	32-40	1.40-1.55	0.60-2.00	0.14-0.18	3.0-5.9	0.0-0.5	.32	.32	
	15-53	40-60	1.30-1.50	0.20-0.60	0.10-0.15	3.0-5.9	0.0-0.5	.28	.28	
	53-55	---	---	---	---	---	---	---	---	
BrC2:										
Bradyville--------------	0-7	18-27	1.40-1.55	0.60-2.00	0.18-0.22	0.0-2.9	0.5-2.0	.43	.43	3
	7-15	32-40	1.40-1.55	0.60-2.00	0.14-0.18	3.0-5.9	0.0-0.5	.32	.32	
	15-53	40-60	1.30-1.50	0.20-0.60	0.10-0.15	3.0-5.9	0.0-0.5	.28	.28	
	53-55	---	---	---	---	---	---	---	---	
ByB:										
Byler-------------------	0-9	15-27	1.35-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	4
	9-22	20-35	1.35-1.50	0.60-2.00	0.17-0.20	0.0-2.9	0.0-0.5	.37	.37	
	22-42	22-38	1.50-1.70	0.06-0.20	0.04-0.08	0.0-2.9	0.0-0.5	.32	.37	
	42-60	40-55	1.30-1.50	0.20-0.60	0.04-0.08	3.0-5.9	0.0-0.5	.24	.28	

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
CpB:										
Capshaw-----------------	0-9	15-27	1.35-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.37	.37	3
	9-18	25-45	1.35-1.55	0.60-2.00	0.16-0.20	0.0-2.9	0.0-0.5	.37	.37	
	18-41	35-55	1.40-1.55	0.06-0.20	0.12-0.18	3.0-5.9	0.0-0.5	.24	.24	
	41-60	35-50	1.40-1.60	0.06-0.20	0.12-0.16	3.0-5.9	0.0-0.5	.24	.24	
DeD2:										
Dellrose----------------	0-11	15-27	1.20-1.40	2.00-6.00	0.10-0.17	0.0-2.9	1.0-3.0	.24	.32	5
	11-60	20-35	1.20-1.40	2.00-6.00	0.09-0.16	0.0-2.9	0.0-0.5	.24	.28	
DeE2:										
Dellrose----------------	0-11	15-27	1.20-1.40	2.00-6.00	0.10-0.17	0.0-2.9	1.0-3.0	.24	.32	5
	11-60	20-35	1.20-1.40	2.00-6.00	0.09-0.16	0.0-2.9	0.0-0.5	.24	.28	
Ea:										
Eagleville--------------	0-6	27-45	1.25-1.40	0.06-0.20	0.12-0.18	6.0-8.9	2.0-5.0	.32	.32	2
	6-37	35-60	1.30-1.50	0.06-0.20	0.10-0.16	6.0-8.9	0.5-1.0	.32	.32	
	37-47	---	---	---	---	---	0.5-1.0	---	---	
Eg:										
Egam--------------------	0-8	20-35	1.30-1.45	0.20-0.60	0.18-0.22	3.0-5.9	2.0-4.0	.32	.32	5
	8-22	35-50	1.30-1.45	0.20-0.60	0.14-0.20	3.0-5.9	0.0-0.5	.32	.32	
	22-60	30-45	1.30-1.45	0.20-0.60	0.12-0.18	3.0-5.9	0.0-0.5	.37	.37	
HaC2:										
Hampshire---------------	0-9	15-27	1.35-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	4
	9-36	35-50	1.25-1.45	0.20-0.60	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	36-49	22-40	1.30-1.50	0.60-2.00	0.07-0.12	0.0-2.9	0.0-0.5	.24	.32	
	49-60	---	---	0.00-0.20	---	---	---	---	---	
HaD2:										
Hampshire---------------	0-9	15-27	1.35-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	4
	9-36	35-50	1.25-1.45	0.20-0.60	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	36-49	22-40	1.30-1.50	0.60-2.00	0.07-0.12	0.0-2.9	0.0-0.5	.24	.32	
	49-60	---	---	0.00-0.20	---	---	---	---	---	
HD:										
Hapludults.										
HhB2:										
Harpeth-----------------	0-9	14-25	1.30-1.45	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	5
	9-47	22-34	1.40-1.60	0.60-2.00	0.16-0.20	0.0-2.9	0.0-0.5	.43	.43	
	47-60	32-50	1.40-1.55	0.60-2.00	0.12-0.17	0.0-2.9	0.0-0.5	.37	.37	
HhC2:										
Harpeth-----------------	0-9	14-25	1.30-1.45	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	5
	9-47	22-34	1.40-1.60	0.60-2.00	0.16-0.20	0.0-2.9	0.0-0.5	.43	.43	
	47-60	32-50	1.40-1.55	0.60-2.00	0.12-0.17	0.0-2.9	0.0-0.5	.37	.37	
HoB2:										
Holston-----------------	0-9	10-25	1.35-1.50	0.60-2.00	0.15-0.20	0.0-2.9	0.5-2.0	.28	.28	5
	9-60	18-35	1.40-1.55	0.60-2.00	0.13-0.20	0.0-2.9	0.0-0.5	.32	.32	
HuB:										
Humphreys---------------	0-8	12-25	1.35-1.50	2.00-6.00	0.10-0.15	0.0-2.9	2.0-4.0	.28	.32	5
	8-36	18-32	1.35-1.55	2.00-6.00	0.09-0.14	0.0-2.9	0.0-0.5	.24	.28	
	36-60	18-32	1.40-1.60	2.00-6.00	0.06-0.12	0.0-2.9	0.0-0.5	.24	.28	
InD2:										
Inman-------------------	0-5	25-40	1.30-1.45	0.60-2.00	0.08-0.12	3.0-5.9	---	.28	.32	3
	5-33	35-55	1.35-1.55	0.20-0.60	0.06-0.11	3.0-5.9	---	.24	.28	
	33-43	---	---	---	---	---	---	---	---	

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors		
								Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
InE2:										
Inman------------------	0-5	25-40	1.30-1.45	0.60-2.00	0.08-0.12	3.0-5.9	---	.28	.32	3
	5-33	35-55	1.35-1.55	0.20-0.60	0.06-0.11	3.0-5.9	---	.24	.28	
	33-43	---	---	---	---	---	---	---	---	
Ln:										
Lindell-----------------	0-15	20-32	1.35-1.50	0.60-2.00	0.16-0.20	0.0-2.9	1.0-3.0	.32	.32	5
	15-60	20-35	1.35-1.50	0.60-2.00	0.14-0.17	0.0-2.9	0.5-1.0	.28	.28	
Me:										
Melvin------------------	0-6	12-17	1.20-1.60	0.60-2.00	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	5
	6-60	12-35	1.30-1.60	0.60-2.00	0.18-0.23	0.0-2.9	0.5-2.0	.43	.43	
MmC2:										
Mimosa------------------	0-7	24-40	1.30-1.50	0.60-2.00	0.12-0.20	0.0-2.9	1.0-3.0	.37	.37	3
	7-11	35-55	1.30-1.50	0.20-0.60	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	11-53	45-60	1.35-1.55	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	53-63	---	---	---	---	---	---	---	---	
MmD2:										
Mimosa------------------	0-7	24-40	1.30-1.50	0.60-2.00	0.12-0.20	0.0-2.9	1.0-3.0	.37	.37	3
	7-11	35-55	1.30-1.50	0.20-0.60	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	11-53	45-60	1.35-1.55	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	53-63	---	---	---	---	---	---	---	---	
MmD3:										
Mimosa------------------	0-2	40-55	1.30-1.50	0.20-0.60	0.12-0.18	3.0-5.9	0.5-2.0	.28	.28	2
	2-47	45-60	1.35-1.55	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	47-57	---	---	---	---	---	---	---	---	
MmE2:										
Mimosa------------------	0-7	24-40	1.30-1.50	0.60-2.00	0.12-0.20	0.0-2.9	1.0-3.0	.37	.37	3
	7-11	35-55	1.30-1.50	0.20-0.60	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	11-53	45-60	1.35-1.55	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	53-63	---	---	---	---	---	---	---	---	
MnC2:										
Mimosa------------------	0-7	24-40	1.30-1.50	0.60-2.00	0.12-0.20	0.0-2.9	1.0-3.0	.37	.37	3
	7-11	35-55	1.30-1.50	0.20-0.60	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	11-53	45-60	1.35-1.55	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	53-63	---	---	---	---	---	---	---	---	
MrE:										
Mimosa------------------	0-5	24-40	1.30-1.50	0.60-2.00	0.12-0.20	0.0-2.9	1.0-3.0	.37	.37	3
	5-45	45-60	1.35-1.55	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	45-55	---	---	---	---	---	---	---	---	
Rock outcrop.										
NeB2:										
Nesbitt-----------------	0-7	15-30	1.35-1.45	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	5
	7-32	20-32	1.40-1.55	0.60-2.00	0.17-0.20	0.0-2.9	---	.37	.37	
	32-60	20-35	1.50-1.65	0.20-2.00	0.10-0.15	0.0-2.9	---	.37	.37	
NeC2:										
Nesbitt-----------------	0-7	15-30	1.35-1.45	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	5
	7-32	20-32	1.40-1.55	0.60-2.00	0.17-0.20	0.0-2.9	---	.37	.37	
	32-60	20-35	1.50-1.65	0.20-2.00	0.10-0.15	0.0-2.9	---	.37	.37	
Oc:										
Ocana-------------------	0-8	18-27	1.35-1.50	2.00-6.00	0.12-0.18	0.0-2.9	1.0-3.0	.28	.32	3
	8-60	20-32	1.35-1.50	2.00-6.00	0.10-0.17	0.0-2.9	0.5-1.0	.28	.32	

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
RtC:										
Rock outcrop.										
Talbott	0-6	15-27	1.35-1.50	0.60-2.00	0.16-0.20	0.0-2.9	0.5-2.0	.37	.37	2
	6-28	40-60	1.30-1.50	0.20-0.60	0.10-0.14	3.0-5.9	0.0-0.5	.24	.24	
SgD2:										
Sugargrove	0-12	10-27	1.20-1.40	0.60-6.00	0.14-0.19	0.0-2.9	1.0-3.0	.28	.37	4
	12-32	18-35	1.30-1.50	0.60-6.00	0.14-0.19	0.0-2.9	0.0-0.5	.28	.32	
	32-41	25-45	1.30-1.50	0.60-6.00	0.10-0.19	0.0-2.9	0.0-0.5	.28	.32	
	41-49	---	---	---	---	---	---	---	---	
	49-59	---	---	---	---	---	---	---	---	
SUF:										
Sulphura	0-3	15-25	1.30-1.50	2.00-6.00	0.12-0.17	0.0-2.9	0.5-2.0	.24	.37	2
	3-36	18-32	1.35-1.55	2.00-6.00	0.07-0.14	0.0-2.9	0.0-0.5	.24	.32	
	36-46	---	---	---	---	---	---	---	---	
TbC:										
Talbott	0-6	15-27	1.35-1.50	0.60-2.00	0.16-0.20	0.0-2.9	0.5-2.0	.37	.37	2
	6-28	40-60	1.30-1.50	0.20-0.60	0.10-0.14	3.0-5.9	0.0-0.5	.24	.24	
UA:										
Udarents.										
UD:										
Udorthents.										
WaC2:										
Waynesboro	0-5	10-30	1.40-1.55	0.60-2.00	0.15-0.21	0.0-2.9	0.5-2.0	.28	.28	5
	5-15	23-35	1.40-1.55	0.60-2.00	0.14-0.20	0.0-2.9	0.5-2.0	.28	.28	
	15-60	35-50	1.40-1.55	0.60-2.00	0.13-0.18	0.0-2.9	0.5-2.0	.28	.28	
WaD2:										
Waynesboro	0-5	10-30	1.40-1.55	0.60-2.00	0.15-0.21	0.0-2.9	0.5-2.0	.28	.28	5
	5-15	23-35	1.40-1.55	0.60-2.00	0.14-0.20	0.0-2.9	0.5-2.0	.28	.28	
	15-60	35-50	1.40-1.55	0.60-2.00	0.13-0.18	0.0-2.9	0.5-2.0	.28	.28	

Table 15.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
AmB:				
Armour	0-11	---	---	5.1-6.0
	11-60	---	---	5.1-6.0
Ar:				
Arrington	0-31	---	---	6.1-7.3
	31-60	---	---	6.1-7.3
BaC:				
Barfield	0-6	---	---	6.1-7.8
	6-18	---	---	6.1-7.8
	18-28	---	---	---
Rock outcrop.				
BfC:				
Barfield	0-6	---	---	6.1-7.8
	6-18	---	---	6.1-7.8
	18-28	---	---	---
Rock outcrop.				
Ashwood	0-5	25-35	---	5.6-7.8
	5-28	35-50	---	5.6-7.8
	28-38	---	---	---
BfF:				
Barfield	0-6	---	---	6.1-7.8
	6-18	---	---	6.1-7.8
	18-28	---	---	---
Rock outcrop.				
Ashwood	0-5	25-35	---	5.6-7.8
	5-28	35-50	---	5.6-7.8
	28-38	---	---	---
BrB2:				
Bradyville	0-7	---	---	5.1-6.5
	7-15	---	---	5.1-6.0
	15-53	---	---	5.1-6.0
	53-55	---	---	---
BrC2:				
Bradyville	0-7	---	---	5.1-6.5
	7-15	---	---	5.1-6.0
	15-53	---	---	5.1-6.0
	53-55	---	---	---
ByB:				
Byler	0-9	---	---	5.1-6.0
	9-22	---	---	5.1-6.0
	22-42	---	---	5.1-6.0
	42-60	---	---	5.1-6.0
CpB:				
Capshaw	0-9	---	---	5.1-6.0
	9-18	---	---	5.1-6.0
	18-41	---	---	5.1-6.0
	41-60	---	---	5.6-6.0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
DeD2:				
Dellrose---------------	0-11	---	---	5.1-6.0
	11-60	---	---	5.1-6.0
DeE2:				
Dellrose---------------	0-11	---	---	5.1-6.0
	11-60	---	---	5.1-6.0
Ea:				
Eagleville-------------	0-6	---	---	5.6-7.8
	6-37	---	---	5.6-7.8
	37-47	---	---	---
Eg:				
Egam-------------------	0-8	10-15	---	6.1-7.3
	8-22	15-25	---	6.1-7.3
	22-60	12-20	---	6.1-7.3
HaC2:				
Hampshire--------------	0-9	---	---	5.1-6.0
	9-36	---	---	5.1-6.0
	36-49	---	---	5.1-6.0
	49-60	---	---	---
HaD2:				
Hampshire--------------	0-9	---	---	5.1-6.0
	9-36	---	---	5.1-6.0
	36-49	---	---	5.1-6.0
	49-60	---	---	---
HD:				
Hapludults.				
HhB2:				
Harpeth----------------	0-9	---	---	5.1-6.5
	9-47	---	---	5.1-6.5
	47-60	---	---	5.1-6.5
HhC2:				
Harpeth----------------	0-9	---	---	5.1-6.5
	9-47	---	---	5.1-6.5
	47-60	---	---	5.1-6.5
HoB2:				
Holston----------------	0-9	---	5.0-10	4.5-5.5
	9-60	---	5.0-10	4.5-5.5
HuB:				
Humphreys--------------	0-8	---	---	5.1-6.0
	8-36	---	---	5.1-6.0
	36-60	---	---	5.1-6.0
InD2:				
Inman------------------	0-5	---	---	6.1-7.3
	5-33	---	---	6.1-7.3
	33-43	---	---	---
InE2:				
Inman------------------	0-5	---	---	6.1-7.3
	5-33	---	---	6.1-7.3
	33-43	---	---	---
Ln:				
Lindell----------------	0-15	---	---	5.6-7.3
	15-60	---	---	5.6-7.3

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
Me:				
Melvin	0-6	5.0-10	---	5.6-7.8
	6-60	5.0-15	---	5.6-7.8
MmC2:				
Mimosa	0-7	---	9.0-16	4.5-6.0
	7-11	---	13-25	4.5-6.0
	11-53	---	15-30	4.5-6.0
	53-63	---	---	---
MmD2:				
Mimosa	0-7	---	9.0-16	4.5-6.0
	7-11	---	13-25	4.5-6.0
	11-53	---	15-30	4.5-6.0
	53-63	---	---	---
MmD3:				
Mimosa	0-2	---	15-25	4.5-6.0
	2-47	---	15-30	4.5-6.0
	47-57	---	---	---
MmE2:				
Mimosa	0-7	---	9.0-16	4.5-6.0
	7-11	---	13-25	4.5-6.0
	11-53	---	15-30	4.5-6.0
	53-63	---	---	---
MnC2:				
Mimosa	0-7	---	9.0-16	4.5-6.0
	7-11	---	13-25	4.5-6.0
	11-53	---	15-30	4.5-6.0
	53-63	---	---	---
MrE:				
Mimosa	0-5	---	9.0-16	4.5-6.0
	5-45	---	15-30	4.5-6.0
	45-55	---	---	---
Rock outcrop.				
NeB2:				
Nesbitt	0-7	---	---	5.1-6.0
	7-32	---	---	5.1-6.0
	32-60	---	---	5.1-6.0
NeC2:				
Nesbitt	0-7	---	---	5.1-6.0
	7-32	---	---	5.1-6.0
	32-60	---	---	5.1-6.0
Oc:				
Ocana	0-8	---	---	5.6-7.3
	8-60	---	---	5.6-7.3
RtC:				
Rock outcrop.				
Talbott	0-6	---	---	5.1-6.5
	6-28	---	---	5.1-6.5
SgD2:				
Sugargrove	0-12	---	5.0-10	4.5-5.5
	12-32	---	5.0-10	4.5-5.5
	32-41	---	5.0-10	4.5-5.5
	41-49	---	---	---
	49-59	---	---	---

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
SUF:				
Sulphura	0-3	---	---	5.1-6.0
	3-36	---	---	5.1-6.1
	36-46	---	---	---
TbC:				
Talbott	0-6	---	---	5.1-6.5
	6-28	---	---	5.1-6.5
UA:				
Udarents.				
UD:				
Udorthents.				
WaC2:				
Waynesboro	0-5	---	5.0-12	4.5-5.5
	5-15	---	5.0-10	4.5-5.5
	15-60	---	8.0-15	4.5-5.5
WaD2:				
Waynesboro	0-5	---	5.0-12	4.5-5.5
	5-15	---	5.0-10	4.5-5.5
	15-60	---	8.0-15	4.5-5.5

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		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
AmB:					
Armour	---	---	None	Moderate	Moderate
Ar:					
Arrington	---	---	None	Low	Low
BaC:					
Barfield	Bedrock (lithic)	8-20	None	High	Low
Rock outcrop.					
BfC:					
Barfield	Bedrock (lithic)	8-20	None	High	Low
Rock outcrop.					
Ashwood	Bedrock (lithic)	20-40	None	High	Low
BfF:					
Barfield	Bedrock (lithic)	8-20	None	High	Low
Rock outcrop.					
Ashwood	Bedrock (lithic)	20-40	None	High	Low
BrB2:					
Bradyville	Bedrock (lithic)	40-60	None	High	Moderate
BrC2:					
Bradyville	Bedrock (lithic)	40-60	None	High	Moderate
ByB:					
Byler	---	---	None	High	Moderate
CpB:					
Capshaw	Bedrock (lithic)	40-80	None	High	Moderate
DeD2:					
Dellrose	---	---	None	High	Moderate
DeE2:					
Dellrose	---	---	None	High	Moderate
Ea:					
Eagleville	Bedrock (lithic)	20-40	None	High	Low
Eg:					
Egam	---	---	None	High	Low
HaC2:					
Hampshire	Bedrock (paralithic)	40-60	None	High	Moderate
HaD2:					
Hampshire	Bedrock (paralithic)	40-60	None	High	Moderate
HD:					
Hapludults.					

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
HhB2:					
Harpeth	---	---	None	Moderate	Moderate
HhC2:					
Harpeth	---	---	None	Moderate	Moderate
HoB2:					
Holston	---	---	None	Moderate	High
HuB:					
Humphreys	---	---	None	Moderate	Moderate
InD2:					
Inman	Bedrock (paralithic)	20-40	None	High	Low
InE2:					
Inman	Bedrock (paralithic)	20-40	None	High	Low
Ln:					
Lindell	---	---	None	Moderate	Low
Me:					
Melvin	---	---	None	High	Low
MmC2:					
Mimosa	Bedrock (lithic)	40-60	None	High	Moderate
MmD2:					
Mimosa	Bedrock (lithic)	40-60	None	High	Moderate
MmD3:					
Mimosa	Bedrock (lithic)	40-60	None	High	Moderate
MmE2:					
Mimosa	Bedrock (lithic)	40-60	None	High	Moderate
MnC2:					
Mimosa	Bedrock (lithic)	40-60	None	High	Moderate
MrE:					
Mimosa	Bedrock (lithic)	40-60	None	High	Moderate
Rock outcrop.					
NeB2:					
Nesbitt	---	---	None	High	Moderate
NeC2:					
Nesbitt	---	---	None	High	Moderate
Oc:					
Ocana	Bedrock (lithic)	40-60	None	Low	Low
RtC:					
Rock outcrop.					
Talbott	Bedrock (lithic)	20-40	None	High	Moderate

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
SgD2:					
Sugargrove	Bedrock (paralithic)	40-40	None	Moderate	Moderate
SUF:					
Sulphura	Bedrock (lithic)	20-40	None	Low	Moderate
TbC:					
Talbott	Bedrock (lithic)	20-40	None	High	Moderate
UA:					
Udarents.					
UD:					
Udorthents.					
WaC2:					
Waynesboro	---	---	None	High	High
WaD2:					
Waynesboro	---	---	None	High	High

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	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
AmB:						
Armour	B	All months	---	---	---	---
Ar:						
Arrington	B	January	4.0-6.0	> 5.0	Brief	Occasional
		February	4.0-6.0	> 5.0	Brief	Occasional
		March	4.0-6.0	> 5.0	Brief	Occasional
		December	---	---	Brief	Occasional
BaC:						
Barfield	D	All months	---	---	---	---
Rock outcrop	---	All months	---	---	---	---
BfC:						
Barfield	D	All months	---	---	---	---
Rock outcrop	---	All months	---	---	---	---
Ashwood	C	All months	---	---	---	---
BfF:						
Barfield	D	All months	---	---	---	---
Rock outcrop	---	All months	---	---	---	---
Ashwood	C	All months	---	---	---	---
BrB2:						
Bradyville	C	All months	---	---	---	---
BrC2:						
Bradyville	C	All months	---	---	---	---
ByB:						
Byler	C	January	2.0-3.0	---	---	---
		February	2.0-3.0	---	---	---
		March	2.0-3.0	---	---	---
		December	2.0-3.0	---	---	---
CpB:						
Capshaw	C	January	2.0-3.5	> 5.0	---	---
		February	2.0-3.5	> 5.0	---	---
		March	2.0-3.5	> 5.0	---	---
		December	2.0-3.5	> 5.0	---	---
DeD2:						
Dellrose	B	All months	---	---	---	---
DeE2:						
Dellrose	B	All months	---	---	---	---

Table 17.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table Upper limit	Water table Lower limit	Flooding Duration	Flooding Frequency
Ea:						
Eagleville	D	January	1.0-2.0	> 5.0	Brief	Occasional
		February	1.0-2.0	> 5.0	Brief	Occasional
		March	1.0-2.0	> 5.0	Brief	Occasional
		December	1.0-2.0	> 5.0	Brief	Occasional
Eg:						
Egam	C	January	2.5-3.5	> 5.0	Very brief	Occasional
		February	2.5-3.5	> 5.0	Very brief	Occasional
		March	2.5-3.5	> 5.0	Very brief	Occasional
		December	2.5-3.5	> 5.0	Very brief	Occasional
HaC2:						
Hampshire	C	All months	---	---	---	---
HaD2:						
Hampshire	C	All months	---	---	---	---
HD:						
Hapludults	---	All months	---	---	---	---
HhB2:						
Harpeth	B	All months	---	---	---	---
HhC2:						
Harpeth	B	All months	---	---	---	---
HoB2:						
Holston	B	All months	---	---	---	---
HuB:						
Humphreys	B	January	5.0-6.0	> 5.0	Brief	Rare
		February	5.0-6.0	> 5.0	Brief	Rare
		March	5.0-6.0	> 5.0	Brief	Rare
		April	---	---	Brief	Rare
		December	5.0-6.0	> 5.0	Brief	Rare
InD2:						
Inman	C	All months	---	---	---	---
InE2:						
Inman	C	All months	---	---	---	---
Ln:						
Lindell	C	January	2.0-3.0	> 5.0	Very brief	Occasional
		February	2.0-3.0	> 5.0	Very brief	Occasional
		March	2.0-3.0	> 5.0	Very brief	Occasional
		December	2.0-3.0	> 5.0	Very brief	Occasional
Me:						
Melvin	D	January	0.0-1.0	> 5.0	Long	Frequent
		February	0.0-1.0	> 5.0	Long	Frequent
		March	0.0-1.0	> 5.0	Long	Frequent
		April	0.0-1.0	> 5.0	Long	Frequent
		May	0.0-1.0	> 5.0	Long	Frequent
		December	0.0-1.0	> 5.0	Long	Frequent
MmC2:						
Mimosa	C	All months	---	---	---	---

Table 17.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
MmD2:						
Mimosa	C	All months	---	---	---	---
MmD3:						
Mimosa	C	All months	---	---	---	---
MmE2:						
Mimosa	C	All months	---	---	---	---
MnC2:						
Mimosa	C	All months	---	---	---	---
MrE:						
Mimosa	C	All months	---	---	---	---
Rock outcrop	---	All months	---	---	---	---
NeB2:						
Nesbitt	B	January	2.0-4.0	> 5.0	---	---
		February	2.0-4.0	> 5.0	---	---
		March	2.0-4.0	> 5.0	---	---
NeC2:						
Nesbitt	B	January	2.0-4.0	> 5.0	---	---
		February	2.0-4.0	> 5.0	---	---
		March	2.0-4.0	> 5.0	---	---
Oc:						
Ocana	B	January	---	---	Very brief	Occasional
		February	---	---	Very brief	Occasional
		March	---	---	Very brief	Occasional
		December	---	---	Very brief	Occasional
RtC:						
Rock outcrop	---	All months	---	---	---	---
Talbott	C	All months	---	---	---	---
SgD2:						
Sugargrove	B	All months	---	---	---	---
SUF:						
Sulphura	B	All months	---	---	---	---
TbC:						
Talbott	C	All months	---	---	---	---
UA:						
Udarents	---	All months	---	---	---	---
UD:						
Udorthents	---	All months	---	---	---	---
WaC2:						
Waynesboro	B	All months	---	---	---	---
WaD2:						
Waynesboro	B	All months	---	---	---	---

Table 18.--Classification of the Soils

Soil name	Family or higher taxonomic class*
Armour	Fine-silty, mixed, thermic Ultic Hapludalfs
Arrington	Fine-silty, mixed, thermic Cumulic Hapludolls
Ashwood	Fine, mixed, thermic Vertic Argiudolls
Barfield	Clayey, mixed, thermic Lithic Hapludolls
Bradyville	Fine, mixed, thermic Typic Hapludalfs
Byler	Fine-silty, siliceous, thermic Oxyaquic Fragiudalfs
Capshaw	Fine, mixed, thermic Oxyaquic Hapludalfs
Dellrose	Fine-loamy, mixed, thermic Typic Paleudults
Eagleville	Fine, montmorillonitic, thermic Fluvaquentic Vertic Endoaquolls
Egam	Fine, mixed, thermic Cumulic Hapludolls
Hampshire	Fine, mixed, thermic Ultic Hapludalfs
Harpeth	Fine-silty, mixed, thermic Typic Paleudalfs
Holston	Fine-loamy, siliceous, thermic Typic Paleudults
Humphreys	Fine-loamy, siliceous, thermic Humic Hapludults
Inman	Fine, mixed, thermic Ruptic-Alfic Eutrochrepts
Lindell	Fine-loamy, mixed, thermic Fluvaquentic Eutrochrepts
Melvin	Fine-silty, mixed, nonacid, mesic Typic Fluvaquents
Mimosa	Fine, mixed, thermic Typic Hapludalfs
Nesbitt	Fine-silty, siliceous, thermic Aquic Paleudalfs
Ocana	Fine-loamy, mixed, thermic Dystric Fluventic Eutrochrepts
Sugargrove	Fine-loamy, mixed, thermic Typic Hapludults
Sulphura	Loamy-skeletal, siliceous, thermic Ruptic-Alfic Dystrochrepts
Talbott	Fine, mixed, thermic Typic Hapludalfs
Waynesboro	Clayey, kaolinitic, thermic Typic Paleudults

* Classification based on the 5th edition of the "Keys to Soil Taxonomy" *(7)*.

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