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Department of  
Agriculture

Natural  
Resources  
Conservation  
Service

In cooperation with  
Tennessee Agricultural  
Experiment Station,  
Wayne County Board of  
Commissioners, and  
Tennessee Department of  
Agriculture

# Soil Survey of Wayne County, Tennessee





# How to Use This Soil Survey

## General Soil Map

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

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

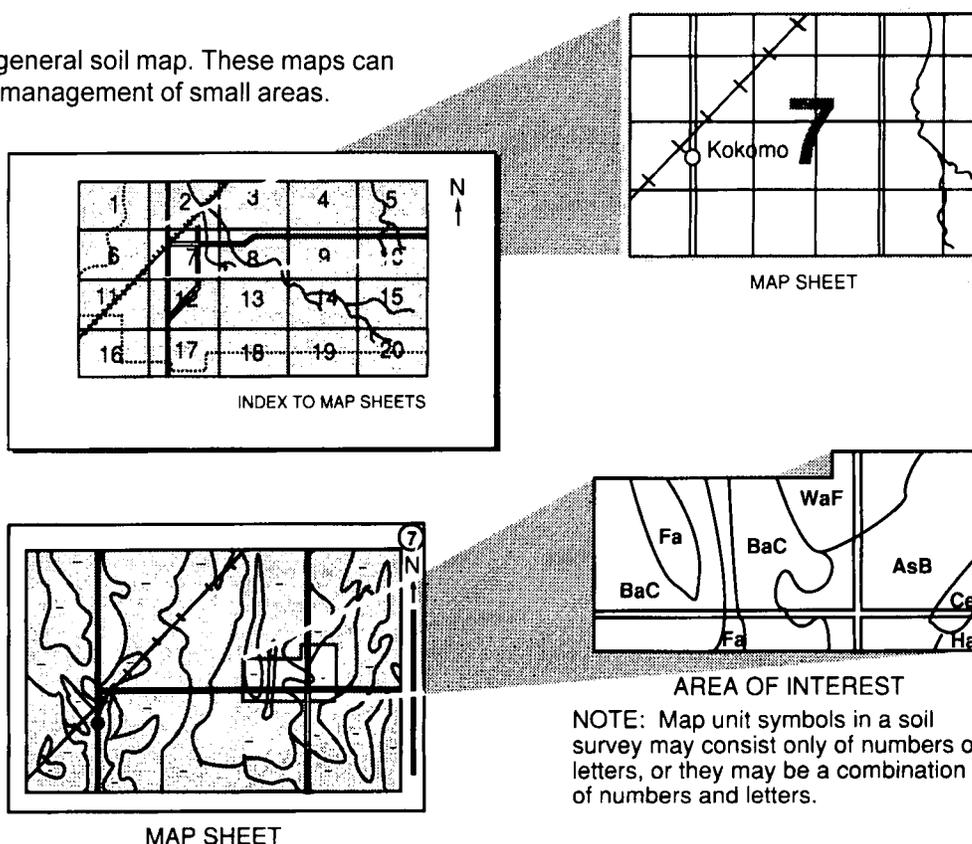
## Detailed Soil Maps

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

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

Locate your area of interest on the map sheet. Note the map units 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 **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.



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

Major fieldwork for this soil survey was completed in 1988. Soil names and descriptions were approved in 1988. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1988. This survey was made cooperatively by the Natural Resources Conservation Service and the Tennessee Agricultural Experiment Station, the Wayne County Board of Commissioners, and the Tennessee Department of Agriculture. The survey is part of the technical assistance furnished to the Wayne County Soil Conservation District.

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

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

**Cover: Most of the agricultural land in Wayne County is in fertile river valleys and stream valleys adjacent to steep, forested hills.**

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# Foreword

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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 Wayne County, Tennessee

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

WAYNE COUNTY is in the southwestern part of middle Tennessee (fig. 1). It is bounded on north by Perry and Lewis Counties; on the east by Lawrence County; on the south by Lauderdale County, Alabama; and on the west by Hardin and Decatur Counties.

Wayne County is the second largest county in Tennessee. It has a land area of 473,000 acres, or approximately 741 square miles. Waynesboro, the county seat, is about 50 miles southwest of Columbia and about 90 miles southeast of Jackson, Tennessee. In 1990, the population of Wayne County was 13,935, and the population of Waynesboro was 1,824. Wayne County also has two towns of slightly lesser size—Collinwood, 12 miles south of Waynesboro, and Clifton, 15 miles northwest of Waynesboro.

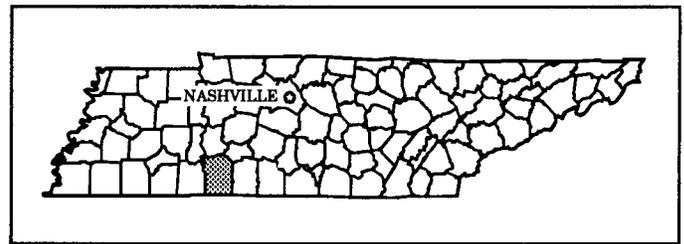


Figure 1.—Location of Wayne County in Tennessee.

## General Nature of the County

This section give general facts about Wayne County. It describes history and development; physiography, drainage, and geology; and climate.

## History and Development

The Cherokee, Shawnee, and Chickasaw Indians were the first inhabitants of the survey area. They obtained most of their food by hunting and fishing, although they farmed to a limited extent.

In 1819, Wayne County was created by the Tennessee legislature from parts of Hickman and Humphreys Counties. The county was named in honor of General Anthony Wayne, a hero in the Revolutionary War.

The early industries in Wayne County consisted of

mining and the production of wood products. Iron ore was first mined around 1832. The furnaces in Wayne, Cumberland, and Brownsport were reported to have been the largest iron furnaces in Tennessee from 1868 to 1876. Many lumber mills, stave mills, and spoke factories were in operation during this time. Large quantities of railroad ties, fence posts, and telegraph and telephone poles were also produced (3).

Presently, farm and timber products provide a large part of the total income in the county. Most farming operations are part-time endeavors and are supplemented by outside employment. Currently, the main industries in Wayne County are the production of garments, shoes, furniture, and lumber.

## Physiography, Drainage, and Geology

Most of Wayne County is in the western part of the Highland Rim physiographic province. The Highland Rim is a dissected plateau that stands above and surrounds the Nashville Basin in the central part of the state. The southwestern and south-central parts of the county are in

the Southern Coastal Plain Province, which overlaps and borders the Highland Rim to the west.

Much of Wayne County consists of extensively dissected hillsides and rolling, narrow ridgetops. The surface of the Highland Rim, which was plateaulike at one time, is now roughly domelike in form. Its greatest elevation is in the central and east-central parts of the county, where elevations slightly exceed 1,050 feet above sea level.

Along the borders of the county, elevations range from about 750 to 950 feet above sea level. The parent material in which the soils formed consists of limestone, siltstone, tripolite, loess, and alluvium. The valleys are generally narrow, V-shaped, and winding. They have steep hillsides. Narrow stream terraces and flood plains are on the valley floors.

In the southwestern and south-central parts of the county, extensive marine deposits cap the Highland Rim. Steep, highly dissected hillsides and narrow, winding ridgetops are characteristic of these parts of the county. The parent material in these areas consists of clayey and gravelly marine deposits, loess, and alluvium. The valleys are more U-shaped and slightly wider than the areas in Highland Rim. Stream terraces and narrow flood plains are on the valley floors.

The western and central parts of Wayne County are drained mainly by major tributaries of the Tennessee and Buffalo Rivers and numerous smaller, secondary streams. The southeastern part of the county is drained by small tributaries that flow southeasterly into Cypress Creek in Lauderdale County, Alabama. These tributaries eventually intersect with the Tennessee River drainage system.

Only a small part of the Tennessee River directly enters the northwest corner of Wayne County. The flow is moderate, and the water clarity is stained to turbid most of the year. The Buffalo River flows westerly across the northern part of the county. It generally has a moderately rapid flow and clear to slightly stained water clarity during most of the year. Most of the streams have clear water between periods of heavy rainfall. Numerous springs, both large and small, provide a supply of clear, pure water in most parts of the county (5).

The most outstanding stratigraphic feature in Wayne County, as compared to the other counties in south-central Tennessee, is the extensive and thick cover of Upper Cretaceous sediments in the southern part of the county. The uppermost of these deposits is the Eutaw Formation, which consists of red sand about 50 feet thick. This formation is confined to the tops of ridges in the southwestern corner of the county. The soils in these areas are generally deep, loamy or clayey, and undulating to hilly. The Tuscaloosa Formation underlies the Eutaw Formation and extends much further northeastward. It is almost entirely gravel and is made up of pebbles,

generally in the form of chert, as large as 4 inches in diameter. An inconspicuous amount of sand and clay is interbedded with the gravel. The formation is 150 feet thick in the southwestern part of the county, and it extends continuously along the ridges to the latitude of Waynesboro. Elsewhere in the county, this formation is represented by outliers capping high points. The soils in these areas are generally deep, loamy, and undulating to very steep (4).

The youngest of the consolidated rocks in Wayne County are of Mississippian age. In the eastern part of the county, the uplands are capped by the Warsaw Formation. This formation is represented by residuum that consists of blocks of porous or quartzose fossiliferous chert and clay. Underlying the Warsaw Formation is the Fort Payne Formation. The Fort Payne Formation consists of an upper cherty unit and a lower siltstone unit (fig. 2). The upper cherty unit has weathered to yellowish brown and reddish brown, irregular plates and granular, siliceous residue with pods of light gray to yellowish gray tripolite and clay. It contains variable proportions of porous to dense blocky chert. This facies has provided the county with a suitable and relatively inexpensive source of material for road construction. The lower facies, where fresh, is calcareous olive gray to brownish black siltstone with, in some places, beds of coarse grained crinoidal limestone that contain some chert. The combined thickness of the upper and lower facies ranges from about 100 to 350 feet. The Fort Payne Formation is exposed extensively in Wayne County. The soils in these areas are generally moderately deep to deep, loamy, and undulating to very steep. On ridgetops, many of the Cretaceous deposits and much of the residuum from the Mississippian rocks has been capped by 20 to 30 inches of silty material, which is presumed to be loess. Some of the material capping the Mississippian rocks appears to be reworked, and it contains variable amounts of chert fragments.

Below the base of the Fort Payne Formation are relatively thin layers of the Chattanooga Shale and Hardin Sandstone. The underlying Devonian rocks consist of small scattered outcrops of the Pegram and Ross limestones. Silurian shales and limestones are well exposed in the larger valleys in the northwestern part of the county. The Decatur Limestone is the uppermost formation. It consists of gray, coarsely crystalline or fine-grained limestone and attains a thickness of 60 feet. Beneath this is the Brownsport Formation. It has three members—the Lobelville shaly limestone, which ranges from a feather edge to 100 feet thick and is the uppermost member; the Bob crystalline limestone, which is as much as 35 feet thick; and the Beech River shaly limestone, which is as much as 85 feet thick. Beneath this is the Wayne group. The uppermost member of the Wayne

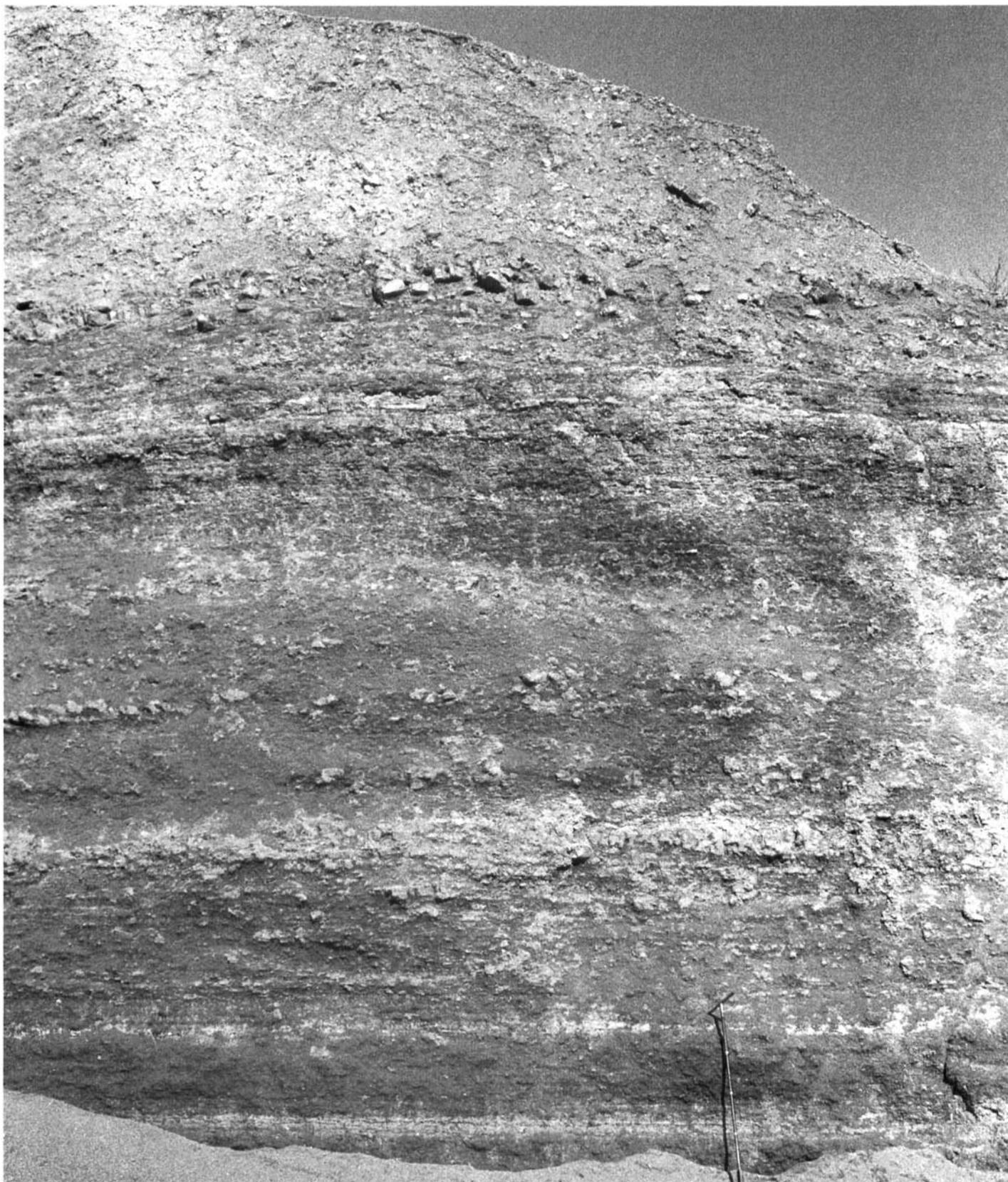


Figure 2.—The cherty upper part of the Fort Payne Formation is an extensive source of road-building material for the county.

group, or the Dixon earthy limestone member, is red in color near Clifton. It ranges from 10 to 45 feet thick. The compact, pinkish and gray limestone of the Lego and Laurel members, which are separated by the thin Waldon shale member, is a total of about 65 feet thick. The Osgood earthy limestone, which is the lowest member, is about 15 feet thick. The basal formation of the Silurian period is the finely crystalline, glauconite-speckled Brassfield limestone, which has a maximum thickness of 25 feet. The soils that formed in these rocks are generally shallow to deep and clayey and are associated with rock outcrop in places. The underlying Ordovician rocks are exposed only in relatively small areas near Clifton. They are represented by the Mannie Shale, the Fernvale Limestone, the Arnheim Formation, and the Hermitage Formation. Along rivers and creeks throughout the county, the country rocks are covered by deep soils that formed in colluvium from adjacent hillsides and in alluvium from streams (10).

## Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Waynesboro in the period 1961 to 1990. 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 37.3 degrees F and the average daily minimum temperature is 25.1 degrees. The lowest temperature on record, which occurred at Waynesboro on January 26, 1940, is -21 degrees. In summer, the average temperature is 74.9 degrees and the average daily maximum temperature is 87.8 degrees. The highest recorded temperature, which occurred at Waynesboro on July 29, 1952, is 108 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 58.05 inches. Of this, 27.35 inches, or 47 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 6.90 inches on December 13, 1956. Thunderstorms occur on about 53 days each year, and most occur in July.

The average seasonal snowfall is about 6.0 inches. The heaviest 1-day snowfall was 15.5 inches, recorded on January 1, 1964. 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 57 percent. Humidity is higher at night, and the average at dawn is about 84 percent. The sun shines 64 percent of the time possible in summer and 44 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10.0 miles per hour, in March.

## How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is generally devoid of roots and other living organisms and has been changed little 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 or miscellaneous area at a specific location on the landscape.

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted 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.

## 1. Biffle-Sulphura-Ironcity

*Very deep and moderately deep, rolling to very steep, somewhat excessively drained and well drained soils that formed in residuum of limestone, siltstone, and tripolite; on uplands*

### Setting

*Landform:* Narrow, rolling ridgetops and steep, highly dissected hillsides (fig. 3)  
*Slope range:* 5 to 75 percent

### Composition

*Extent of the unit:* 53 percent of the survey area  
*Extent of the soils in the unit:*  
Biffle soils—70 percent  
Sulphura soils—10 percent  
Ironcity soils—8 percent  
Minor soils—12 percent

### Soil Properties and Qualities

#### Biffle

*Drainage class:* Somewhat excessively drained

*Position on landform:* Narrow, rolling ridgetops and hillsides

*Parent material:* Residuum derived from limestone and tripolite

*Surface textural class:* Gravelly silt loam

*Slope:* 5 to 60 percent

#### Sulphura

*Drainage class:* Somewhat excessively drained

*Position on landform:* Hillsides

*Parent material:* Residuum derived from siltstone and limestone

*Surface textural class:* Channery silt loam

*Slope:* 15 to 75 percent

#### Ironcity

*Drainage class:* Well drained

*Position on landform:* Rolling ridgetops and hillsides

*Parent material:* Silty material and residuum derived from limestone

*Surface textural class:* Gravelly silt loam

*Slope:* 5 to 20 percent

### Minor Soils

- Sugargrove soils on colluvial benches on hillsides
- Humphreys and Minvale soils on foot slopes and alluvial fans
- Ennis and Riverby soils along narrow drainageways
- Areas of similar soils that are deep over bedrock; in slightly concave areas on ridgetops and intermingled areas on side slopes

### Land Use Suitability

#### Cropland

- Areas of Ironcity soils on rolling ridgetops are suited to row crops if properly managed to reduce the hazard of erosion.
- Biffle and Sulphura soils in steep areas are poorly suited to use as cropland.

#### Pasture and hayland

- Ironcity soils and the less sloping areas of the Biffle soils are suited to use as pasture and hayland.

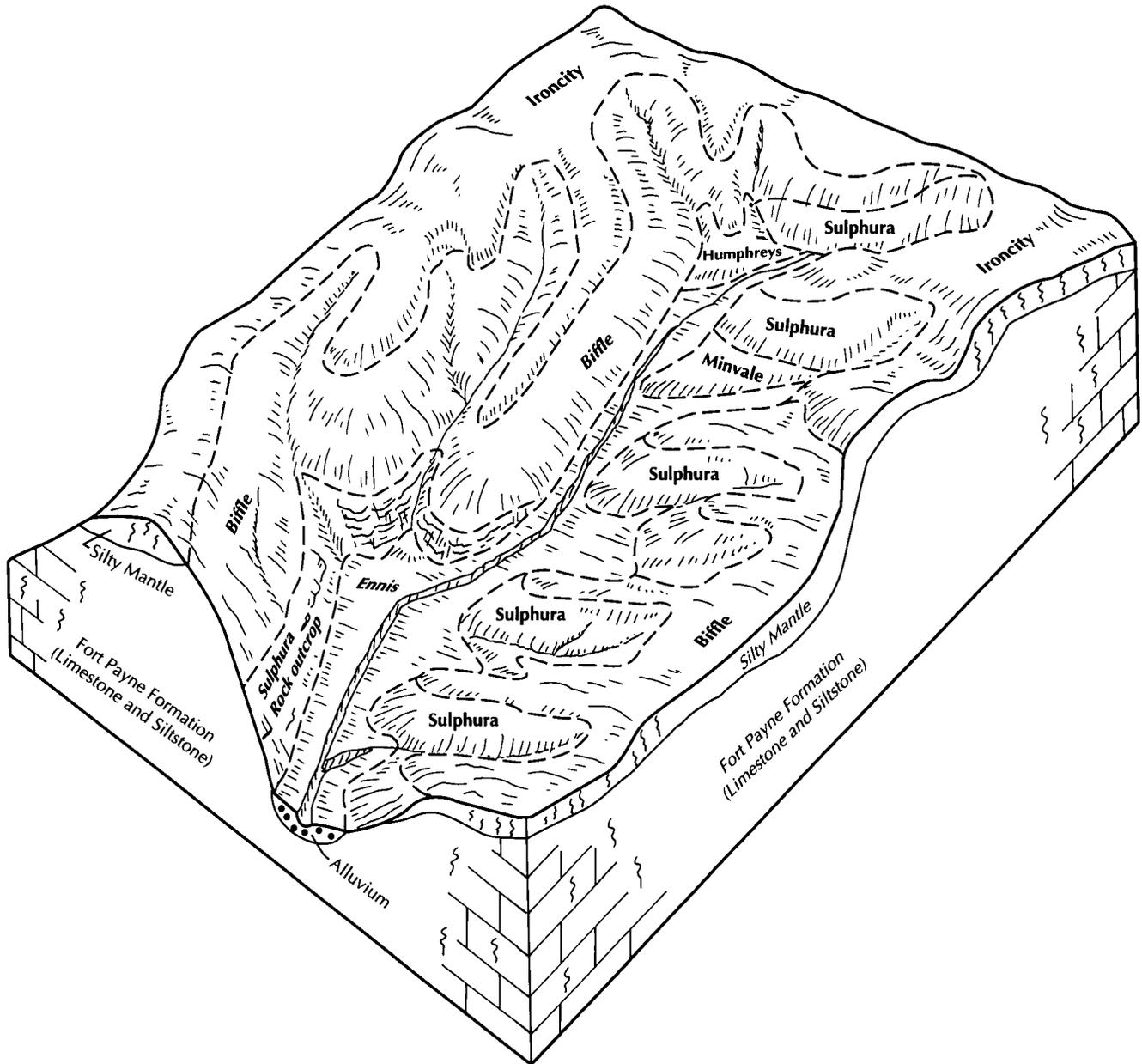


Figure 3.—Typical pattern of soils and parent material in the Biffle-Sulphura-Ironcity general soil map unit.

- Sulphura soils are droughty and are not suited to pasture or hay production.

#### Woodland

- Most areas are suited to woodland. The plant species and aspect are management concerns for timber production.

#### Residential and commercial uses

- Most of the less sloping areas of Ironcity soils are suited to residential and commercial uses.

- Steeper areas in the unit are poorly suited or unsuited because of the slope and the depth to rock.

## 2. Brandon-Saffell-Lax

*Very deep, undulating to steep, well drained and moderately well drained soils that formed in a mixture of gravelly marine deposits and loess; on uplands*

#### Setting

*Landform: Undulating ridges and dissected hillsides (fig. 4)*

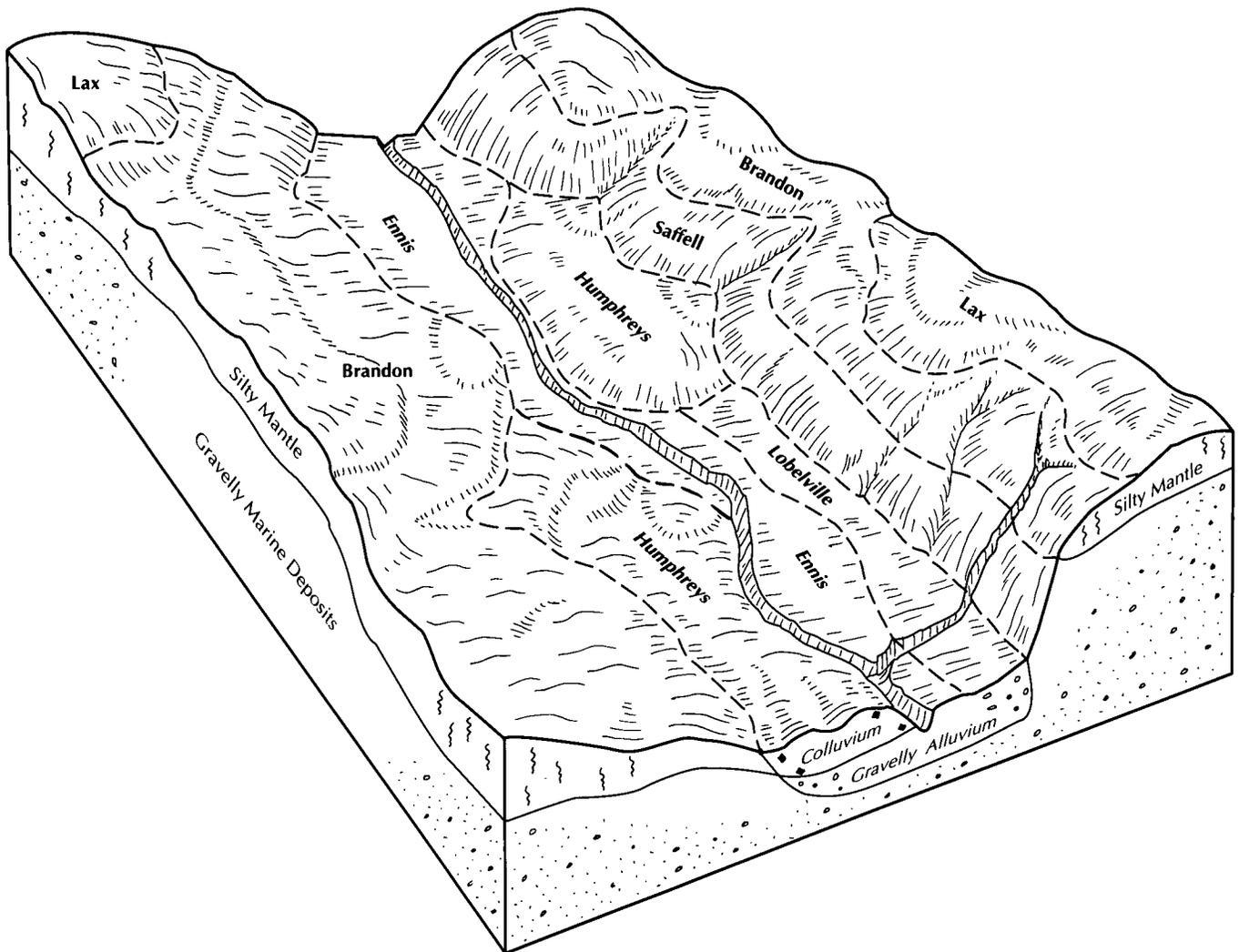


Figure 4.—Typical pattern of soils and parent material in Brandon-Saffell-Lax and Humphreys-Ennis-Lobelville general soil map units.

*Slope range:* 2 to 60 percent

**Composition**

*Extent of the unit:* 15 percent of the survey area

*Extent of the soils in the unit:*

Brandon soils—55 percent

Saffell soils—26 percent

Lax soils—16 percent

Minor soils—3 percent

**Soil Properties and Qualities**

**Brandon**

*Drainage class:* Well drained

*Position on landform:* Undulating to rolling ridgetops and hillsides

*Parent material:* Silty mantle overlying gravelly marine sediments

*Surface textural class:* Silt loam

*Slope:* 2 to 20 percent

**Saffell**

*Drainage class:* Well drained

*Position on landform:* Hillsides

*Parent material:* Gravelly alluvium and loamy marine sediments

*Surface textural class:* Gravelly fine sandy loam

*Slope:* 12 to 60 percent

**Lax**

*Drainage class:* Moderately well drained

*Position on landform:* Undulating to rolling ridgetops

*Parent material:* Silty mantle overlying gravelly alluvium and limestone residuum

*Surface textural class:* Silt loam

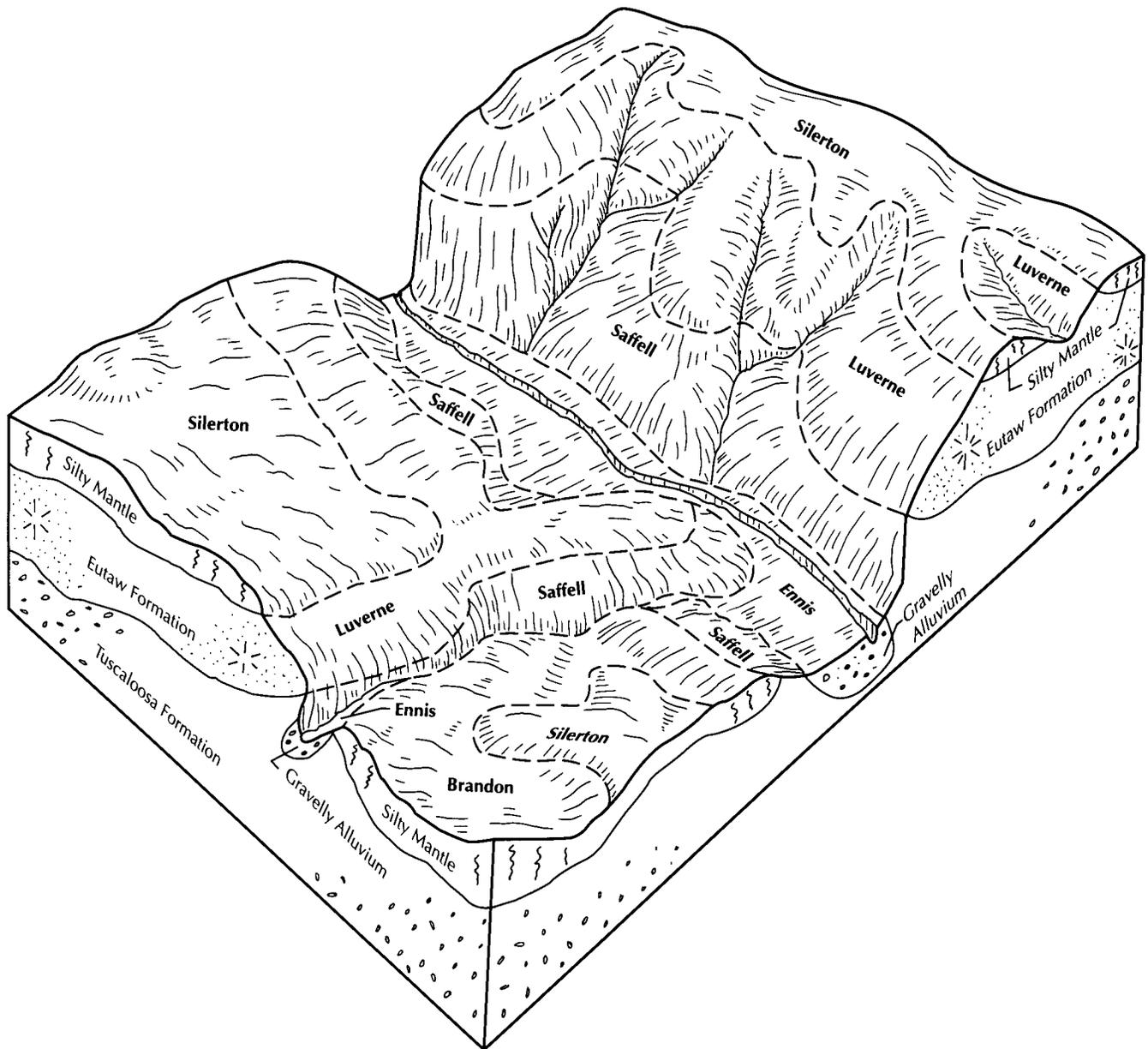


Figure 5.—Typical pattern of soils and parent material in the Saffell-Luverne-Silerton general soil map unit.

*Slope:* 2 to 12 percent

#### **Minor Soils**

- Silerton and Luverne soils in higher positions on hillsides
- Biffle soils on the lower parts of hillsides
- Humphreys soils on alluvial fans and foot slopes
- Ennis and Lobelville soils along narrow drainageways

#### **Land Use Suitability**

##### **Cropland**

- The undulating and rolling areas of Brandon and Lax

soils are suited to cropland if properly managed to reduce the hazard of erosion.

- Steeper areas of Brandon and Saffell soils are poorly suited to use as cropland.

##### **Pasture and hayland**

- Most areas of the Lax soils and the less sloping areas of Brandon soils are suited to pasture and hayland.
- Saffell soils are very droughty and are poorly suited to use as pasture or hayland.

**Woodland**

- Most areas in this unit are suited to use as woodland. Plant selection, aspect, and slope are important management concerns for timber production.

**Residential and commercial uses**

- Most areas in this unit are poorly suited for most urban uses.
- The slow permeability and wetness are limitations for septic tank absorption fields and dwellings in areas of Lax soils.
- The slope and permeability in the subsoil are limitations in areas of Brandon and Saffell soils.

**3. Saffell-Luverne-Silerton**

*Very deep, undulating to steep, well drained soils that formed in loamy and clayey marine deposits; on uplands*

**Setting**

*Landform:* Undulating ridges and dissected hillsides (fig. 5)

*Slope range:* 2 to 60 percent

**Composition**

*Extent of the unit:* 10 percent of the survey area

*Extent of the soils in the unit:*

Saffell soils—40 percent

Luverne soils—28 percent

Silerton soils—21 percent

Minor soils—11 percent

**Soil Properties and Qualities****Saffell**

*Drainage class:* Well drained

*Position on landform:* Hillsides

*Parent material:* Gravelly alluvium and loamy marine sediments

*Surface textural class:* Gravelly fine sandy loam

*Slope:* 12 to 60 percent

**Luverne**

*Drainage class:* Well drained

*Position on landform:* Undulating to rolling ridgetops and hillsides

*Parent material:* Loamy and clayey marine sediments

*Surface textural class:* Fine sandy loam

*Slope:* 2 to 20 percent

**Silerton**

*Drainage class:* Well drained

*Position on landform:* Undulating to rolling ridgetops

*Parent material:* Silty mantle overlying clayey marine deposits

*Surface textural class:* Silt loam

*Slope:* 2 to 12 percent

**Minor Soils**

- Brandon soils on shoulder slopes
- Lax soils in intermingled areas on ridgetops
- Biffle soils on the lower parts of hillsides
- Taft soils in concave positions on ridges
- Ennis, Lobelville, and Lee soils along narrow drainageways

**Land Use Suitability****Cropland**

- The undulating and rolling areas of Silerton soils are suited to cropland if properly managed to reduce the hazard of erosion.
- Steeper areas of Luverne and Saffell soils are poorly suited to use as cropland.

**Pasture and hayland**

- Silerton soils and the less sloping areas of Luverne soils are suited for use as pasture and hayland.
- Saffell soils are extremely droughty and are poorly suited to use as pasture and hayland.

**Woodland**

- Most areas of this unit are suited to use as woodland. Plant selection, aspect, and slope are management concerns for timber production.

**Residential and commercial uses**

- Most areas of the unit are poorly suited for most urban uses. The permeability in the subsoil, the slope, and the high shrink-swell potential are some of the limitations for residential and commercial uses.

**4. Dickson-Mountview-Guthrie**

*Very deep, undulating to rolling, well drained to poorly drained soils that formed in a silty mantle and the underlying residuum of limestone; on uplands*

**Setting**

*Landform:* Undulating to rolling ridges and upland depressions

*Slope range:* 2 to 12 percent

**Composition**

*Extent of the unit:* 1 percent of the survey area

*Extent of the soils in the unit:*

Dickson soils—40 percent

Mountview soils—39 percent  
 Guthrie soils—8 percent  
 Minor soils—13 percent

### ***Soil Properties and Qualities***

#### **Dickson**

*Drainage class:* Moderately well drained  
*Position on landform:* Undulating ridgetops  
*Parent material:* Silty mantle overlying limestone residuum  
*Surface textural class:* Silt loam  
*Slope:* 2 to 8 percent

#### **Mountview**

*Drainage class:* Well drained  
*Position on landform:* Undulating to rolling ridgetops  
*Parent material:* Silty mantle overlying limestone residuum  
*Surface textural class:* Silt loam  
*Slope:* 2 to 12 percent

#### **Guthrie**

*Drainage class:* Poorly drained  
*Position on landform:* Concave depressions  
*Parent material:* Silty mantle and limestone residuum  
*Surface textural class:* Silt loam  
*Slope:* 0 to 2 percent

### ***Minor Soils***

- Ironcity and Biffle soils on ridgetops and hillsides
- Taft soils on broad upland flats

### ***Land Use Suitability***

#### **Cropland**

- The undulating and rolling areas of Dickson and Mountview soils are well suited to use as cropland if properly managed to reduce the hazard of erosion.
- Guthrie soils are poorly suited to use as cropland because of the wetness and ponding.

#### **Pasture and hayland**

- Dickson and Mountview soils are well suited to use as pasture and hayland.
- Guthrie soils are poorly suited because of the excessive wetness and ponding.

#### **Woodland**

- Most areas of this unit are suited to use as woodland. Plant selection and plant competition are some management concerns for timber production.

#### **Residential and commercial uses**

- Mountview soils are suited to most residential and commercial uses.
- Dickson and Guthrie soils are poorly suited for most

uses because of the restricted permeability and the wetness.

## **5. Pickwick-Dickson-Sulphura**

*Very deep and moderately deep, undulating to steep, moderately well drained to somewhat excessively drained soils that formed in a silty mantle, loamy alluvium, and loamy residuum of limestone and siltstone; on uplands and high stream terraces*

### ***Setting***

*Landform:* Undulating to hilly uplands and high stream terraces  
*Slope range:* 2 to 60 percent

### ***Composition***

*Extent of the unit:* 1 percent of the survey area  
*Extent of the soils in the unit:*  
 Pickwick soils—30 percent  
 Dickson soils—23 percent  
 Sulphura soils—15 percent  
 Minor soils—32 percent

### ***Soil Properties and Qualities***

#### **Dickson**

*Drainage class:* Moderately well drained  
*Position on landform:* Undulating upland ridgetops  
*Parent material:* Silty mantle overlying limestone residuum  
*Surface textural class:* Silt loam  
*Slope:* 2 to 8 percent

#### **Pickwick**

*Drainage class:* Well drained  
*Position on landform:* Undulating to moderately steep stream terraces  
*Parent material:* Loamy alluvium  
*Surface textural class:* Silt loam and silty clay loam  
*Slope:* 2 to 20 percent

#### **Sulphura**

*Drainage class:* Somewhat excessively drained  
*Position on landform:* Steep upland hillsides  
*Parent material:* Residuum of siltstone and limestone  
*Surface textural class:* Channery silt loam  
*Slope:* 15 to 75 percent

### ***Minor Soils***

- Biffle and Sugargrove soils on hillsides
- Humphreys soils on foot slopes
- Ennis soils along narrow drainageways
- Areas of rock outcrop on ledges and the lower hillsides
- Taft soils in slight depressions and broad flats

- Humphreys soils on toe slopes

### ***Land Use Suitability***

#### **Cropland**

- The undulating and rolling areas of Dickson and Pickwick soils are well suited to use as cropland if properly managed to reduce the hazard of erosion.
- Sulphura soils are poorly suited to use as cropland because of the slope and the depth to rock.

#### **Pasture and hayland**

- Dickson and Pickwick soils are well suited to use as pasture and hayland.
- Sulphura soils are droughty and are on steep slopes. They are poorly suited to use as pasture and hayland.

#### **Woodland**

- Most areas of this unit are suited to use as woodland. Plant selection, aspect, and plant competition are some management concerns for timber production.

#### **Residential and commercial uses**

- Pickwick soils are suited to most residential and commercial uses.
- Dickson soils are poorly suited for most uses because of the restricted permeability and wetness.
- Sulphura soils are poorly suited to most uses because of the slope and the depth to rock.

## **6. Braxton-Talbott-Rock outcrop**

*Very deep and moderately deep, undulating to very steep, well drained soils that formed in valley fill and limestone residuum; on uplands*

### ***Setting***

*Landform:* Undulating to rolling ridgetops and hillsides (fig. 6)

*Slope range:* 2 to 75 percent

### ***Composition***

*Extent of the unit:* 6 percent of the survey area

*Extent of the soils in the unit:*

Braxton soils—36 percent

Talbott soils—29 percent

Rock outcrop—11 percent

Minor soils—24 percent

### ***Soil Properties and Qualities***

#### **Braxton**

*Drainage class:* Well drained

*Position on landform:* Undulating and rolling ridgetops and hillsides

*Parent material:* Valley fill and limestone residuum

*Surface textural class:* Silt loam and silty clay loam

*Slope:* 2 to 20 percent

#### **Talbott**

*Drainage class:* Well drained

*Position on landform:* Rolling ridgetops and hillsides

*Parent material:* Limestone residuum

*Surface textural class:* Silt loam and silty clay loam

*Slope:* 5 to 35 percent

#### **Rock outcrop**

*Position on landform:* Steep and very steep upland hillsides

*Parent material:* Level-bedded siltstone and limestone bedrock

*Slope:* 15 to 75 percent

### ***Minor Soils***

- Biffle, Barfield, and Ashwood soils on hillsides
- Pickwick, Armour, and Wolftever soils on stream terraces
- Ennis and Pruitton soils on flood plains

### ***Land Use Suitability***

#### **Cropland**

- The undulating and rolling areas of Braxton soils are suited to use as cropland if properly managed to reduce the hazard of erosion.
- Talbott soils are poorly suited to use as cropland because of the slope, the texture of the subsoil, and the depth to rock.

#### **Pasture and hayland**

- The less sloping areas of Braxton soils are suited to use as pasture and hayland.
- Areas of Talbott soils contain rock outcrop, large stones, and boulders that hinder management and the production of forage.

#### **Woodland**

- Most areas of this unit are suited to use as woodland. Plant selection, aspect, the hazard of erosion, and the numerous stones and rock outcrops are management concerns for timber production.

#### **Residential and commercial uses**

- Most areas of the unit are poorly suited to most residential and commercial uses because of the permeability of the subsoil, the shrink-swell potential, the depth to rock, and the rock outcrop.

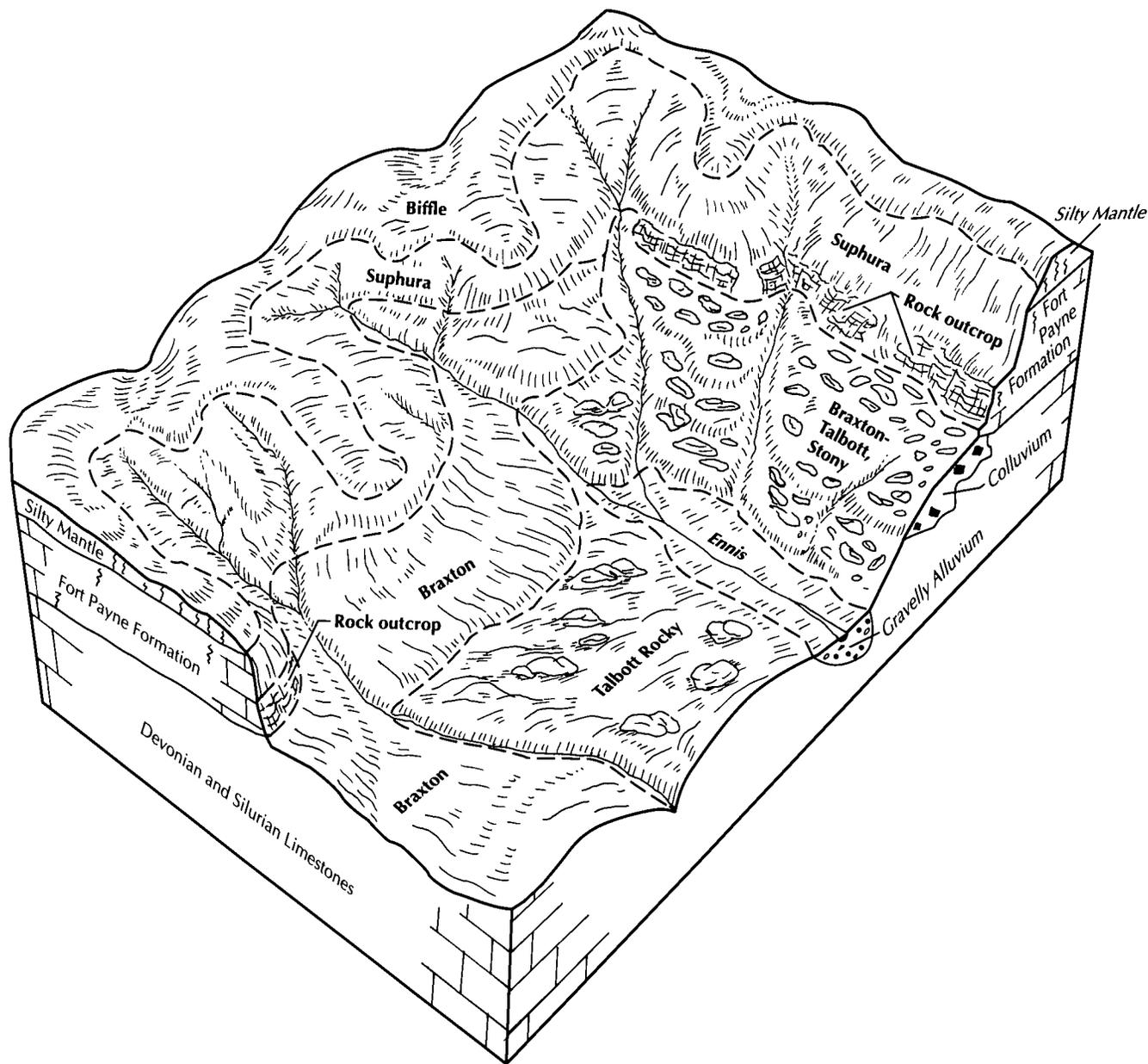


Figure 6.—Typical pattern of soils and parent material in the Braxton-Talbott-Rock outcrop general soil map unit.

**7. Armour-Humphreys-Riverby**

*Very deep, nearly level to rolling, well drained to excessively drained soils that formed in loamy alluvium and colluvium; on stream terraces and flood plains*

**Setting**

*Landform:* Nearly level flood plains and undulating to rolling stream terraces (fig. 7)

*Slope range:* 0 to 12 percent

**Composition**

*Extent of the unit:* 5 percent of the survey area

*Extent of the soils in the unit:*

- Armour soils—22 percent
- Humphreys soils—21 percent
- Riverby soils—20 percent
- Minor soils—37 percent

***Soil Properties and Qualities***

**Armour**

*Drainage class:* Well drained  
*Position on landform:* Nearly level to undulating stream terraces  
*Parent material:* Loamy alluvium  
*Surface textural class:* Silt loam  
*Slope:* 0 to 5 percent

**Riverby**

*Drainage class:* Excessively drained  
*Position on landform:* Flood plains  
*Parent material:* Gravelly alluvium  
*Surface textural class:* Gravelly sandy loam  
*Slope:* 0 to 2 percent

**Humphreys**

*Drainage class:* Well drained



Figure 7.—An area of the Armour-Humphreys-Riverby general soil map unit along the Buffalo River.

*Position on landform:* Undulating to rolling stream terraces  
*Parent material:* Loamy alluvium and colluvium  
*Surface textural class:* Gravelly silt loam  
*Slope:* 2 to 12 percent

### **Minor Soils**

- Pruitton, Ennis, Lobelville, Lindell, Bruno, and Egam soils on flood plains
- Wolftever and Pickwick soils on stream terraces

### **Land Use Suitability**

#### **Cropland**

- The undulating and rolling areas of Armour and Humphreys soils are well suited to cropland if properly managed to reduce the hazard of erosion.
- The nearly level areas of Armour soils are subject to occasional flooding.
- Riverby soils are poorly suited to use as cropland because of the flooding and a high content of coarse fragments.

#### **Pasture and hayland**

- Armour and Humphreys soils are well suited to pasture and hayland.
- Riverby soils are poorly suited for use as pasture and hayland.

#### **Woodland**

- Most areas of this unit are suited to use as woodland. Plant selection and the frequency of flooding are some management concerns for timber production.

#### **Residential and commercial uses**

- Most undulating areas of Armour and Humphreys soils are suited for residential and commercial uses.
- Riverby soils and the nearly level areas of Armour soils are poorly suited because of the flooding.

## **8. Humphreys-Ennis-Lobelville**

*Very deep, nearly level to rolling, well drained and moderately well drained soils that formed in loamy alluvium and colluvium; on flood plains and stream terraces*

### **Setting**

*Landform:* Nearly level flood plains and undulating to rolling stream terraces  
*Slope range:* 0 to 12 percent

### **Composition**

*Extent of the unit:* 9 percent of the survey area

*Extent of the soils in the unit:*  
 Humphreys soils—29 percent  
 Ennis soils—25 percent  
 Lobelville soils—14 percent  
 Minor soils—32 percent

### **Soil Properties and Qualities**

#### **Humphreys**

*Drainage class:* Well drained  
*Position on landform:* Undulating to rolling stream terraces  
*Parent material:* Loamy alluvium and colluvium  
*Surface textural class:* Gravelly silt loam  
*Slope:* 2 to 12 percent

#### **Ennis**

*Drainage class:* Well drained  
*Position on landform:* Flood plains  
*Parent material:* Gravelly alluvium  
*Surface textural class:* Gravelly silt loam  
*Slope:* 0 to 2 percent

#### **Lobelville**

*Drainage class:* Moderately well drained  
*Position on landform:* Flood plains  
*Parent material:* Gravelly alluvium  
*Surface textural class:* Gravelly silt loam  
*Slope:* 0 to 2 percent

### **Minor Soils**

- Pruitton, Lee, Lindell, and Riverby soils on flood plains
- Armour and Pickwick soils on stream terraces
- Minvale soils on foot slopes

### **Land Use Suitability**

#### **Cropland**

- Most areas are well suited to cropland. The flooding and coarse fragments in the surface layer and subsoil can hinder the production and management of some crops.

#### **Pasture and hayland**

- The unit is well suited to pasture and hayland. Plant selection is important in areas that flood or are seasonally wet.

#### **Woodland**

- Most areas of the unit are well suited for timber production.

#### **Residential and commercial uses**

- Most areas of Humphreys soils are suited for residential and commercial uses.
- Ennis and Lobelville soils are poorly suited because of the flooding.

## Detailed Soil Map Units

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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, 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, Braxton silty clay loam, 5 to 12 percent slopes, severely eroded, is a phase of the Braxton series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Rock outcrop-Barfield complex, 10 to 30 percent slopes, is an example.

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

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities,

and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

### **AmA—Armour silt loam, 0 to 2 percent slopes, occasionally flooded**

#### ***Setting***

*Landscape position:* Nearly level stream terraces

*Shape of areas:* Broad and nearly level

*Size of areas:* 10 to 100 acres

*Major use:* Cropland

#### ***Typical Profile***

*Surface layer:*

0 to 10 inches, brown, very friable silt loam

*Subsoil:*

10 to 15 inches, dark yellowish brown, friable silt loam

15 to 31 inches, brown, friable silt loam

31 to 43 inches, yellowish brown, friable silt loam

*Substratum:*

43 to 62 inches, yellowish brown, mottled, friable silt loam

#### ***Inclusions***

- Small areas of the excessively drained Riverby soils and well drained Pruitton and Ennis soils in lower positions near stream channels
- Areas of soils that have a dark brown buried soil below a depth of 40 inches
- Soils on short, steep side slopes along natural stream levees

#### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Moderately acid to strongly acid, except in areas where lime has been added

*Flood hazard:* Occasional for very brief periods in winter and early spring

*High water table:* None

*Depth to rock:* More than 5 feet

#### ***Use and Management***

##### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- Most locally adapted crops can be grown, and good yields can be attained.
- Small grains produce good yields on this soil but can be damaged by the occasional flooding.

*Suitable management practices:*

- Seasonal flooding occurs in winter and early spring, but it is not a limitation for management.

*Capability class:* llw

##### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- Because of the flooding, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

##### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, hickory, eastern white pine, and loblolly pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

##### **Residential and commercial uses**

*Suitability for most uses:* Poorly suited

*General management considerations:*

- This soil is poorly suited to most residential and commercial uses because of flooding.

*Suitable management practices:*

- The hazard of flooding can be reduced by locating dwellings, commercial structures, and roads and streets above the expected flood level.

### **AmB—Armour silt loam, 2 to 5 percent slopes, gravelly substratum**

#### ***Setting***

*Landscape position:* Undulating stream terraces

*Shape of areas:* Irregular

*Size of areas:* 10 to 40 acres

*Major use:* Cropland

#### ***Typical Profile***

*Surface layer:*

0 to 6 inches, brown, very friable silt loam

*Subsoil:*

6 to 15 inches, yellowish brown, friable silt loam

15 to 41 inches, strong brown, friable silty clay loam

*Substratum:*

41 to 60 inches, strong brown, friable gravelly loam

***Inclusions***

- Small areas of Humphreys soils on terrace escarpments and foot slopes

***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the upper part, moderately rapid in the substratum

*Available water capacity:* High

*Soil reaction:* Moderately acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

***Use and Management***

**Cropland**

*Suitability:* Well suited

*General management considerations:*

- Most locally adapted crops can be grown, and good yields can be attained.
- This soil is susceptible to erosion, which can result in the removal of valuable topsoil (fig. 8).

*Suitable management practices:*

- No-till planting, contour farming, and stripcropping can help to control erosion and maintain productivity.

*Capability class:* IIe

**Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- This soil has no significant limitations for forage production if erosion is controlled.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

**Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, hickory, eastern white pine, and loblolly pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Well suited

*General management considerations:*

- Low strength is a limitation for local roads and streets.
- The permeability in the subsoil is a limitation for septic tank absorption fields.

*Suitable management practices:*

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Increasing the size of the absorption field helps to overcome the restricted permeability.

**AsF—Ashwood-Rock outcrop complex, 25 to 70 percent slopes**

***Setting***

*Landscape position:* Very steep hillsides

*Shape of areas:* Long and narrow

*Size of areas:* 10 to 100 acres

*Composition of the unit:* 60 percent Ashwood soils, 25 percent Rock outcrop, and 15 percent included soils

*Major use:* Woodland

***Typical Profile***

**Ashwood**

*Surface layer:*

0 to 11 inches, very dark grayish brown, very friable silt loam

*Subsoil:*

11 to 16 inches, dark yellowish brown, very firm clay  
16 to 25 inches, olive brown, mottled, very firm clay  
25 inches, hard limestone bedrock

**Rock outcrop**

Rock outcrop consists of vertical bluffs of horizontally bedded limestone and sandstone. The slopes are very steep and complex. Some areas have numerous fragments, stones, and boulders deposited as talus on ledges and in crevices.

***Inclusions***

- Small areas of the somewhat excessively drained Sulphura soils in higher positions on hillsides
- Small, intermingled areas of Barfield soils on hillsides
- Small areas of the excessively drained Riverby soils along narrow drainageways



Figure 8.—A grassed waterway in an area of Armour silt loam, 2 to 5 percent slopes, gravelly substratum. The grassed waterway transports runoff from the field, helps to control erosion, and improves water quality.

### ***Important Soil Properties and Features***

*Drainage class:* Well drained  
*Permeability:* Moderately slow  
*Available water capacity:* Low to moderate  
*Soil reaction:* Moderately acid to mildly alkaline  
*Flood hazard:* None  
*High water table:* None  
*Depth to rock:* At a depth of 20 to 40 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

*General management considerations:*

- This map unit is unsited as cropland because of the steep slope, the rock outcroppings, and the low available water capacity.

*Capability class:* VIIIs

### Pasture and hayland

*Suitability:* Poorly suited

- This map unit is poorly suited to pasture and hay because of the slope, the hazard of erosion, the low available water capacity, and outcroppings of hard limestone bedrock at the surface.

### Woodland

*Suitability:* Poorly suited

*Trees suitable for planting:* Eastern redcedar, Virginia pine, white oak, chesnut oak, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber in this unit are the hazard of erosion, the equipment limitation, the seedling mortality rate, and plant competition.
- Most areas of this map unit are too small and difficult to manage for timber using conventional methods of harvesting, and costs will not likely be offset by economic returns.
- Harvesting trees may increase the hazard of erosion.

*Suitable management practices:*

- High-lead or other cable logging methods are suitable to use in areas of this unit.
- Because of the slope and the difficulty in accessing sites, the natural reforestation of harvested areas by hardwood sprouts and seedlings is recommended.

### Residential and commercial uses

*Suitability:* Unsuitable

*General management considerations:*

- This map unit is poorly suited to most residential and commercial uses because of the slope, the depth to rock, and the shrink-swell potential.

## BfC—Biffle gravelly silt loam, 5 to 15 percent slopes

### Setting

*Landscape position:* Rolling ridgetops

*Shape of areas:* Narrow and winding

*Size of areas:* 10 to 200 acres

*Major uses:* Woodland, pasture

### Typical Profile

*Surface layer:*

0 to 2 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

2 to 10 inches, yellowish brown, very friable gravelly silt loam

*Subsoil:*

10 to 32 inches, strong brown, friable gravelly silt loam

*Substratum:*

32 to 60 inches, highly weathered, dense beds of granular tripolite

### Inclusions

- Small, intermingled areas of similar soils that are more than 60 inches deep over weathered bedrock
- Small areas of the well drained Ironcity soils on small knolls and on broader ridges

### Important Soil Properties and Features

*Drainage class:* Somewhat excessively drained

*Permeability:* Moderately rapid

*Available water capacity:* Low

*Soil reaction:* Extremely acid to very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Soft tripolite at a depth of 20 to 40 inches

### Use and Management

#### Cropland

*Suitability:* Poorly suited

*General management considerations:*

- The size and shape of the map unit, the hazard of erosion, the slope, the low available water capacity, and the depth to rock are major limitations for crop production.

*Suitable management practices:*

- Because this unit has extensive limitations for crop production, other areas that are more desirable for use as cropland should be considered.

*Capability class:* IVs

#### Pasture and hayland

*Suitability:* Suited

*General management considerations:*

- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- The low amount of available water reduces yields in most years.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Forage plants that can tolerate droughty conditions should be selected.
- Avoiding overgrazing, especially in the sloping areas, reduces the hazard of erosion.

#### Woodland

*Suitability:* Suited to drought-tolerant species

*Trees suitable for planting:* Eastern redcedar, white oak, mockernut hickory, chesnut oak, Virginia pine, and shortleaf pine

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- Selecting drought-resistant species and planting seedlings on north- and east-facing slopes increase the seedling survival rate by retaining soil moisture.
- Competing vegetation can be reduced by using controlled burning, applying herbicide, and girdling or cutting unwanted trees.

### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- The depth to rock is a major limitation for septic tank absorption fields and dwellings with basements.
- The slope is a limitation for dwellings, small commercial buildings, and local roads and streets.

*Suitable management practices:*

- Onsite investigation is needed to determine whether the area considered for a septic tank absorption field is underlain by suitable material.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Local roads and streets should be located in less sloping areas and on the contour.

## **BfE—Biffle gravelly silt loam, 15 to 30 percent slopes**

### ***Setting***

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 20 to 300 acres

*Major use:* Woodland

### ***Typical Profile***

*Surface layer:*

0 to 2 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

2 to 10 inches, yellowish brown, very friable gravelly silt loam

*Subsoil:*

10 to 32 inches, strong brown, friable gravelly silt loam

*Substratum:*

32 to 60 inches, highly weathered, dense beds of granular tripolite

### ***Inclusions***

- Small areas of similar soils that are less than 20 inches deep over bedrock
- Areas of Sulphura soils on the lower part of hillsides
- Small areas of Minvale soils on colluvial benches and foot slopes
- Small areas of Ennis soils in narrow drainageways

### ***Important Soil Properties and Features***

*Drainage class:* Somewhat excessively drained

*Permeability:* Moderately rapid

*Available water capacity:* Low

*Soil reaction:* Extremely acid to very strongly acid

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Soft tripolite at a depth of 20 to 40 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to row crops because of the slope, the limited available water, the depth to rock, and the content of fragments in the surface layer and subsoil.

*Capability class:* VIs

#### **Pasture and hayland**

*Suitability:* Poorly suited

*General management considerations:*

- The low amount of available water results in poor to sparse pasture stands.
- If the plants are overgrazed, the slope increases the hazard of erosion.

*Suitable management practices:*

- Forage plants that can tolerate droughty conditions should be selected.
- Drought-tolerant grasses and legumes require pasture renovation when the better forage plants have decreased to a level less than that needed for optimum production.
- Stocking rates should be adjusted to prevent overgrazing, especially on steeper slopes.

#### **Woodland**

*Suitability:* Suited to drought-resistant species

*Trees suitable for planting:* Eastern redcedar, white oak, mockernut hickory, chesnut oak, and Virginia pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, restricted use of equipment, the seedling mortality rate, and plant competition.

*Suitable management practices:*

- Steep yarding paths, skid trails, fire breaks, and landings are subject to rilling and gulying unless they are provided

with adequate water bars, are protected by plant cover, or both.

- Selecting drought-resistant species and planting seedlings on north- and east-facing slopes increase the seedling survival rate and help to retain soil moisture.
- Careful planning is needed for skid trails and access roads during harvesting and planting operations because of the slope, the content of fragments in the surface layer and subsoil, and the depth to rock.
- Competing vegetation can be reduced by using controlled burning, applying herbicide, and girdling or cutting unwanted trees.

### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to most residential and commercial uses because of the slope and depth to rock.

## **BfF—Biffle gravelly silt loam, 30 to 60 percent slopes**

### ***Setting***

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 20 to 1,000 acres

*Major use:* Woodland

### ***Typical Profile***

*Surface layer:*

0 to 2 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

2 to 10 inches, yellowish brown, very friable gravelly silt loam

*Subsoil:*

10 to 32 inches, strong brown, friable gravelly silt loam

*Substratum:*

32 to 60 inches, highly weathered, dense beds of granular tripolite

### ***Inclusions***

- Small areas of similar soils that are less than 20 inches deep over bedrock
- Areas of Sulphura soils on the lower part of hillsides
- Small areas of Minvale soils on colluvial benches and foot slopes
- Small areas of Ennis soils in narrow drainageways

### ***Important Soil Properties and Features***

*Drainage class:* Somewhat excessively drained

*Permeability:* Moderately rapid

*Available water capacity:* Low

*Soil reaction:* Extremely acid to very strongly acid

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Soft tripolite at a depth of 20 to 40 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to row crops because of the slope, the limited available water, the depth to rock, and the content of fragments in the surface layer and subsoil.

*Capability class:* VIIIs

#### **Pasture and hayland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited for pasture and hay because of the slope, the content of fragments on the surface and in the subsoil, the low available water capacity, and the hazard of erosion.

#### **Woodland**

*Suitability:* Suited to drought-resistant species

*Trees suitable for planting:* Eastern redcedar, white oak, mockernut hickory, chesnut oak, and Virginia pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, restricted use of equipment, the seedling mortality rate, and plant competition.

*Suitable management practices:*

- Steep yarding paths, skid trails, fire breaks, and landings are subject to rilling and gullying unless they are provided with adequate water bars, are protected by plant cover, or both.
- Wheeled and tracked equipment can be used in the moderately steep areas, but more specialized harvesting methods may be required in the steeper areas.
- Selecting drought-resistant species and planting seedlings on north- and east-facing slopes increase the seedling survival rate and help to retain soil moisture.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to most residential and commercial uses because of the very steep slope and the depth to rock.

## **BnB—Brandon silt loam, 2 to 5 percent slopes**

### ***Setting***

*Landscape position:* Undulating ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 40 acres

*Major use:* Pasture

### ***Typical Profile***

*Surface layer:*

0 to 2 inches, dark grayish brown, very friable silt loam

*Subsurface layer:*

2 to 6 inches, yellowish brown, very friable silt loam

*Subsoil:*

6 to 24 inches, strong brown, friable silty clay loam

24 to 34 inches, strong brown, friable gravelly clay loam

34 to 42 inches, strong brown and yellowish brown, friable gravelly clay loam

*Substratum:*

42 to 60 inches, strong brown, massive, extremely gravelly clay loam

### ***Inclusions***

- Small areas of the moderately well drained Lax soils in concave landscape positions
- Soils that are on severely eroded knolls and have a surface texture of gravelly silty clay loam

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the surface layer and upper part of the subsoil, moderately rapid to rapid in the substratum

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- This soil is suited to most locally adapted crops.
- This soil is susceptible to erosion, which can result in the removal of valuable topsoil.

*Suitable management practices:*

- No-till planting, contour farming, and stripcropping can help to control erosion and maintain productivity.

*Capability class:* I1e

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- This soil has no significant limitations for forage production if erosion is controlled.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* White oak, southern red oak, chesnut oak, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Well suited

*General management considerations:*

- Septic tank absorption fields may have downslope seepage because of the permeability in the lower part of the substratum.

- Low strength is a limitation for local roads and streets.

*Suitable management practices:*

- Onsite investigation is needed to determine whether the area considered for a septic tank absorption field is underlain by suitable material.

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## **BnC—Brandon silt loam, 5 to 12 percent slopes**

### ***Setting***

*Landscape position:* Undulating ridgetops and side slopes

*Shape of areas:* Irregular

*Size of areas:* 10 to 60 acres

*Major uses:* Pasture, woodland

### ***Typical Profile***

*Surface layer:*

0 to 2 inches, dark grayish brown, very friable silt loam

*Subsurface layer:*

2 to 6 inches, yellowish brown, very friable silt loam

*Subsoil:*

6 to 24 inches, strong brown, friable silty clay loam

24 to 34 inches, strong brown, friable gravelly clay loam

34 to 42 inches, strong brown and yellowish brown, friable gravelly clay loam

*Substratum:*

42 to 60 inches, strong brown, massive, extremely gravelly clay loam

**Inclusions**

- Small areas of the moderately well drained Lax soils in concave landscape positions
- Soils that are on severely eroded knolls and have a surface texture of gravelly silty clay loam

**Important Soil Properties and Features**

*Drainage class:* Well drained

*Permeability:* Moderate in the surface layer and upper part of the subsoil, moderately rapid to rapid in the substratum

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

**Use and Management****Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillth can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

**Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by

rotating grazing, controlling weeds, and applying fertilizer annually.

**Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* White oak, southern red oak, chesnut oak, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- Septic tank absorption fields may have downslope seepage because of the permeability in the lower part of the substratum.

- The slope is a limitation for dwellings and small commercial buildings.

- Low strength is a limitation for local roads and streets.

*Suitable management practices:*

- Onsite investigation is needed to determine whether the area considered for a septic tank absorption field is underlain by suitable material.

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

**BnD—Brandon silt loam, 12 to 20 percent slopes****Setting**

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 100 acres

*Major use:* Woodland

**Typical Profile**

*Surface layer:*

0 to 2 inches, dark grayish brown, very friable silt loam

*Subsurface layer:*

2 to 6 inches, yellowish brown, very friable silt loam

*Subsoil:*

6 to 24 inches, strong brown, friable silty clay loam

24 to 34 inches, strong brown, friable gravelly clay loam  
 34 to 42 inches, strong brown and yellowish brown, friable gravelly clay loam

*Substratum:*

42 to 60 inches, strong brown, massive, extremely gravelly clay loam

***Inclusions***

- Small areas of Saffell soils in steeper, convex positions on hillsides
- Areas of severely eroded soils that have a surface texture of gravelly silty clay loam

***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the surface layer and upper part of the subsoil, moderately rapid to rapid in the substratum

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

***Use and Management***

**Cropland**

*Suitability:* Poorly suited

*General management considerations:*

- This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Suitable management practices:*

- Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.
- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

**Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

**Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* White oak, southern red oak,

chestnut oak, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber is the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- Septic tank absorption fields may have downslope seepage because of the permeability in the lower part of the substratum.
- Slope is a major limitation for dwellings and small commercial buildings.
- Low strength and slope are limitations for local roads and streets.

*Suitable management practices:*

- Onsite investigation is needed to determine whether the area considered for a septic tank absorption field is underlain by suitable material.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Planning and designing local roads and streets in the less sloping areas, placing them on the contour, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

**BrB—Braxton silt loam, 2 to 5 percent slopes**

***Setting***

*Landscape position:* Undulating ridgetops

*Shape of areas:* Irregular

*Size of areas:* 5 to 15 acres

*Major uses:* Cropland, pasture

***Typical Profile***

*Surface layer:*

0 to 5 inches, brown, friable silt loam

*Subsoil:*

5 to 12 inches, red, firm silty clay

12 to 72 inches, red, firm clay

### ***Inclusions***

- Small areas of severely eroded soils that have a silty clay loam surface layer

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- This soil is susceptible to erosion, which can result in the removal of valuable topsoil.

*Suitable management practices:*

- No-till planting, contour farming, and stripcropping can help to control erosion and maintain productivity.

*Capability class:* IIe

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- Hay yields may be reduced during dry years because of the limited amount of available water.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil is a limitation for septic tank absorption fields.
- The shrink-swell potential is a limitation for dwellings and commercial buildings.
- Low strength is a limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the absorption field or using an alternative method of waste disposal helps to overcome the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

### **BrC—Braxton silt loam, 5 to 12 percent slopes**

#### ***Setting***

*Landscape position:* Rolling ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 50 acres

*Major uses:* Pasture, woodland

#### ***Typical Profile***

*Surface layer:*

0 to 5 inches, brown, very friable silt loam

*Subsoil:*

5 to 12 inches, red, firm silty clay

12 to 72 inches, red, firm clay

#### ***Inclusions***

- Small areas of severely eroded soils that have a silty clay loam surface layer

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result

in the removal of valuable topsoil and can adversely affect rooting depth.

- The soil can be droughty during dry years, and yields are reduced.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillth can be improved or maintained and soil moisture can be increased by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the shrink-swell potential are limitations for dwellings and small commercial buildings.
- Low strength is a major limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- Proper building designs and construction costs are the

major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## BrC3—Braxton silty clay loam, 5 to 12 percent slopes, severely eroded

### Setting

*Landscape position:* Rolling ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 30 acres

*Major use:* Pasture

### Typical Profile

*Surface layer:*

0 to 5 inches, strong brown, friable silty clay loam

*Subsoil:*

5 to 72 inches, red, firm clay

### Inclusions

- Small areas of uneroded soils that have a silt loam surface layer
- Small areas of soils that have numerous shallow gullies

### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate to low

*Soil reaction:* Strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Poorly suited

*General management considerations:*

- This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Suitable management practices:*

- Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the shrink-swell potential are limitations for dwellings and small commercial buildings.
- Low strength is a major limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## **BrD—Braxton silt loam, 12 to 20 percent slopes**

### ***Setting***

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 30 acres

*Major uses:* Woodland, pasture

### ***Typical Profile***

*Surface layer:*

0 to 5 inches, brown, very friable silt loam

*Subsoil:*

5 to 12 inches, red, firm silty clay

12 to 72 inches, red, firm clay

### ***Inclusions***

- Small areas of Talbott soils on the lower part of hillsides
- Small areas of severely eroded soils that have a silty clay loam surface layer

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Poorly suited

*General management considerations:*

- This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Suitable management practices:*

- Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.
- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

#### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### Woodland

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the shrink-swell potential are major limitations for dwellings and small commercial buildings.
- Low strength and slope are major limitations for roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## BrD3—Braxton silty clay loam, 12 to 20 percent slopes, severely eroded

### Setting

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 30 acres

*Major uses:* Pasture, woodland

### Typical Profile

*Surface layer:*

0 to 5 inches, strong brown, friable silty clay loam

*Subsoil:*

5 to 72 inches, red, firm clay

### Inclusions

- Small areas of Talbott soils on the lower part of hillsides
- Small areas of uneroded soils that have a silt loam surface layer

### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited as cropland because of the slope, the severe hazard of erosion, and the limited available water capacity.

*Capability class:* VIe

#### Pasture and hayland

*Suitability:* Suited to pasture, poorly suited to hay

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### Woodland

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the shrink-swell potential are major limitations for dwellings and small commercial buildings.
- Low strength and slope are major limitations for roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## BsC—Braxton-Talbott complex, 5 to 15 percent slopes

### Setting

*Landscape position:* Rolling ridgetops and side slopes

*Shape of areas:* Irregular

*Size of areas:* 10 to 30 acres

*Composition of the unit:* 65 percent Braxton soil, 25 percent Talbott soil, and 10 percent included soils

*Major use:* Woodland

### Typical Profile

#### Braxton

*Surface layer:*

0 to 4 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

4 to 10 inches, yellowish brown, very friable gravelly silt loam

*Subsoil:*

10 to 32 inches, red, firm silty clay

32 to 60 inches, red, firm clay

#### Talbott

*Surface layer:*

0 to 5 inches, brown, very friable gravelly silt loam

*Subsoil:*

5 to 38 inches, strong brown, very firm clay

38 inches, hard gray limestone

### Inclusions

- Small areas of soils that have bedrock at a depth of 40 to 60 inches and do not have fragments in the surface layer
- Areas of soils that have cobbly and stony surfaces
- Small, intermingled areas of soils that have siltstone bedrock at a depth of 20 to 40 inches and that can be excavated with little difficulty; in the Houston community along Indian Creek

### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Braxton—strongly acid to moderately acid; Talbott—strongly acid to mildly alkaline

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Braxton—more than 5 feet; Talbott—20 to 40 inches

### Use and Management

#### Cropland

*Suitability:* Poorly suited

- This map unit is poorly suited to use as cropland because of the slope, the high hazard of erosion, the size and shape of the unit, and the content of fragments and cobbles in the surface layer.

*Suitable management practices:*

- The less sloping areas that are used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.
- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

**Pasture and hayland**

*Suitability:* Suited to pasture, poorly suited to hay

*General management considerations:*

- Large stones and cobbles can hinder the use of equipment during the harvesting of hay.
- Hay yields may be reduced during dry years because of the limited amount of available water.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- Forage plants that can tolerate droughty conditions should be selected.
- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

**Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope, the shrink-swell potential, and the depth to rock are limitations for dwellings and for small commercial buildings.
- Low strength is a major limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

**BsE—Braxton-Talbott complex, 15 to 35 percent slopes*****Setting***

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 30 to 200 acres

*Composition of the unit:* 65 percent Braxton soil, 25 percent Talbott soil, and 10 percent included soils

*Major use:* Woodland

***Typical Profile*****Braxton**

*Surface layer:*

0 to 4 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

4 to 10 inches, yellowish brown, very friable gravelly silt loam

*Subsoil:*

10 to 32 inches, red, firm silty clay

32 to 60 inches, red, firm clay

**Talbott**

*Surface layer:*

0 to 5 inches, brown, very friable gravelly silt loam

*Subsoil:*

5 to 38 inches, strong brown, very firm clay

38 inches, hard gray limestone

***Inclusions***

- Small areas of soils that have bedrock at a depth of 40 to 60 inches and do not have fragments in the surface layer
- Areas of soils that have cobbly and stony surfaces
- Small, intermingled areas of soils that have siltstone bedrock at a depth of 20 to 40 inches and that can be excavated with little difficulty; in the Houston community along Indian Creek

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Braxton—strongly acid to moderately acid;  
Talbot—moderately acid to mildly alkaline

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Braxton—more than 5 feet; Talbot—20 to 40 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

- This map unit is unsited to use as cropland because of the slope, the high hazard of erosion, the content of fragments and cobbles in the surface layer, and the limited available water capacity.

*Capability class:* V1e

#### **Pasture and hayland**

*Suitability:* Suited to pasture, poorly suited to hay

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, chesnut oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide,

and girdling or cutting unwanted trees, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Unsited

*General management considerations:*

- This unit is unsited to residential and commercial uses because of the slope, the slow permeability in the subsoil, the depth to rock in some areas, and the shrink-swell potential.

### **BtE—Braxton-Talbot complex, 15 to 35 percent slopes, stony**

#### ***Setting***

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 15 to 100 acres

*Composition of the unit:* 65 percent Braxton soil, 25 percent Talbot soil, and 10 percent included soils

*Major use:* Woodland

#### ***Typical Profile***

##### **Braxton**

*Surface layer:*

0 to 5 inches, brown, very friable gravelly silt loam

*Subsoil:*

5 to 12 inches, red, firm silty clay

12 to 72 inches, red, firm clay

##### **Talbot**

*Surface layer:*

0 to 4 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

4 to 8 inches, strong brown, friable gravelly silty clay loam

*Subsoil:*

8 to 34 inches, reddish brown, very firm clay

34 to 38 inches, mottled yellowish brown, brownish yellow, and light brownish gray, very firm clay

38 inches, hard gray limestone

#### ***Inclusions***

- Areas of soils that have numerous stones and cobbles on the surface
- Areas of soils that have few or no cobbles and stones on the surface and in the surface layer
- Small, intermingled areas of soils that have siltstone bedrock at a depth of 20 to 40 inches and that can be excavated with little difficulty; in the Houston community along Indian Creek

### **Important Soil Properties and Features**

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Braxton—moderate; Talbott—low or moderate

*Soil reaction:* Strongly acid to moderately acid, except in horizons near bedrock which range from moderately acid to mildly alkaline

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Braxton—more than 5 feet; Talbott—20 to 40 inches

### **Use and Management**

#### **Cropland**

*Suitability:* Unsited

- This map unit is poorly suited to use as cropland because of the slope, the high hazard of erosion, the content of stones and cobbles on the surface, and the limited available water capacity.

*Capability class:* VIs

#### **Pasture and hayland**

*Suitability:* Suited for pasture, unsited for hay

*General management considerations:*

- This map unit is unsited for hay because of the slope and the large stones and cobbles on the surface.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, chesnut oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.

- Tracked timber harvesting equipment should be used because of the large stones and cobbles on the surface, but only during dry periods from midsummer to early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Unsited

*General management considerations:*

- This unit is unsited to residential and commercial uses because of the slope, the slow permeability in the subsoil, the large stones and cobbles on the surface, the depth to rock in some areas, and the shrink-swell potential.

### **BxC—Braxton-Talbott-Gullied land complex, 5 to 20 percent slopes**

#### **Setting**

*Landscape position:* Rolling to moderately steep hillsides

*Shape of areas:* Irregular

*Size of areas:* 5 to 20 acres

*Composition of the unit:* 40 percent Braxton soil, 35 percent Talbott soil, and 25 percent gullied areas

*Major use:* Woodland

#### **Typical Profile**

##### **Braxton**

*Surface layer:*

0 to 3 inches, brown, mottled, friable silty clay loam

*Subsoil:*

3 to 12 inches, red, firm silty clay

12 to 72 inches, red, firm clay

##### **Talbott**

*Surface layer:*

0 to 3 inches, strong brown, friable silty clay loam

*Subsoil:*

3 to 38 inches, strong brown, very firm clay

38 inches, hard gray limestone

##### **Gullied land**

Areas of Gullied land consist of numerous U-shaped and V-shaped gullies that range from 4 to 15 feet deep, 10 to 15 feet wide, and 50 to 200 feet long. The gullies are separated by steeply convex, intergully ridges. The sides and floor of most gullies consist of clayey soil material. Stones, cobbles, and chert fragments cover the surface and bottom of gullies in many areas. Rock outcrops are common.

### ***Inclusions***

- Small areas of soils that have moderate erosion of the surface layer or that are not eroded

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Low

*Soil reaction:* Strongly acid to moderately acid, except in horizons near bedrock which range from moderately acid to mildly alkaline

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Braxton—more than 5 feet; Talbott—20 to 40 inches; outcrops of limestone in some gullied areas

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

- This map unit is unsited to use as cropland because of the slope, the severe hazard of erosion, the gullies, and the limited available water capacity.

*Capability class:* VIIe

#### **Pasture and hayland**

*Suitability:* Poorly suited

*General management considerations:*

- This map unit is poorly suited for pasture and hay because of the severe hazard of erosion, the deep gullies, and a limited available water capacity.

#### **Woodland**

*Suitability:* Suited to drought-tolerant species

*Trees suitable for planting:* White oak, chesnut oak, eastern redcedar, shortleaf pine, and Virginia pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, the seedling mortality rate, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked equipment can be used in most areas, but planting and harvesting operations should be conducted only from late summer through fall.
- Gullied areas require additional planning and more specialized equipment for timber harvesting and planting operations.
- Planting hardier seedlings and maintaining a cover of mulch on the rows increase the seedling survival rate.
- Site preparation, such as burning, applying herbicide,

and girdling or cutting unwanted trees, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Unsited

*General management considerations:*

- This unit is unsited to residential and commercial uses because of the steep slope, the slow permeability in the subsoil, the deep gullies, the depth to rock in some areas, and the shrink-swell potential.

### **By—Bruno sandy loam, frequently flooded**

#### ***Setting***

*Landscape position:* Flood plains of rivers and large streams

*Slope range:* 0 to 2 percent

*Shape of areas:* Long and narrow

*Size of areas:* 10 to 50 acres

*Major uses:* Woodland, pasture

#### ***Typical Profile***

*Surface layer:*

0 to 12 inches, dark yellowish brown, very friable sandy loam

*Substratum:*

12 to 36 inches, dark yellowish brown, loose, loamy sand  
36 to 49 inches, yellowish brown, loose sand that has thin strata of sandy loam

49 to 60 inches, brown, loose sand that has thin strata of yellowish brown sand

### ***Inclusions***

- Small areas of the well drained Ennis and Pruitton soils on small knolls
- Small areas of the gravelly Riverby soils along stream channels

### ***Important Soil Properties and Features***

*Drainage class:* Excessively drained

*Permeability:* Rapid

*Available water capacity:* Low

*Soil reaction:* Slightly acid to neutral

*Flood hazard:* Frequent for brief periods in winter through early summer

*High water table:* Seasonal, at a depth of 4 to 6 feet in winter and early spring

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Poorly suited

*General management considerations:*

- Frequent flooding limits the production and harvest of most crops.
- In fringe areas of the unit that are less subject to flooding, droughtiness and nutrient leaching are management concerns for crop production.

*Suitable management practices:*

- Planting short-season annuals, such as soybeans or grain sorghum, is recommended in areas of this soil because of the hazard of flooding in winter, spring, and during wet periods in early summer.
- Planting cover crops, returning crop residue to the soil, and using no-till conservation tillage practices increase soil moisture.
- Applications of lime and fertilizer are needed to maintain productivity.

*Capability class:* Vw

**Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- The frequent flooding for short periods can damage forage grasses and endanger livestock.
- Hay yields may be reduced because of flooding or the limited amount of available water during dry periods.

*Suitable management practices:*

- Forage plants, such as tall fescue and white clover, that can tolerate short periods of wetness should be selected.
- Grazing livestock from summer through early fall and moving them to other areas from winter through spring minimizes the danger to livestock resulting from the flooding.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

**Woodland**

*Suitability:* Suited to bottomland hardwoods

*Trees suitable for planting:* Cherrybark oak, Shumard oak, swamp white oak, sweetgum, yellow-poplar, and American sycamore

*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- Planting hardier seedlings and bedding rows minimize the damage from flooding and improve the seedling survival rate.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Unsited

*General management considerations:*

- This unit is unsited to residential and commercial uses because of the frequent flooding.

**DkB—Dickson silt loam, 2 to 5 percent slopes*****Setting***

*Landscape position:* Broad, undulating ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 60 acres

*Major uses:* Cropland, pasture

***Typical Profile***

*Surface layer:*

0 to 6 inches, brown, very friable silt loam

*Subsurface layer:*

6 to 11 inches, brown, very friable silt loam

*Subsoil:*

11 to 22 inches, yellowish brown, friable silt loam

22 to 27 inches, fragipan that is yellowish brown, mottled, firm silt loam

27 to 33 inches, fragipan that is yellowish brown, mottled, firm silty clay loam

33 to 60 inches, yellowish red, firm clay

***Inclusions***

- Small areas of the well drained Mountview soils on slightly higher knolls
- Small areas of the somewhat poorly drained Taft soils in slight depressions and along drainageways

***Important Soil Properties and Features***

*Drainage class:* Moderately well drained

*Permeability:* Moderate above the fragipan, slow in the fragipan

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* Perched at a depth of 18 to 24 inches in winter and spring

*Depth to rock:* More than 5 feet

***Use and Management*****Cropland**

*Suitability:* Well suited

*General management considerations:*

- Most climatically adapted crops grow well if they are managed to control erosion.
- The seasonal wetness in winter and early in spring can

restrict rooting depth and inhibit plant germination.

*Suitable management practices:*

- Planting cover crops, using a crop rotation system, returning crop residue to the soil, and using conservation tillage practices help to hold erosion rates to acceptable levels and increase soil moisture.
- Planting crops later in the spring improves plant germination and early growth.

*Capability class:* IIe

### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- A perched water table limits grazing for several days at a time during the winter and early spring.
- Hay yields may be reduced during dry years because of the limited amount of available water.

*Suitable management practices:*

- Grazing should be deferred until a period from late spring to early fall.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* White oak, cherrybark oak, southern red oak, and yellow-poplar

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- A seasonally perched water table and restricted permeability in the subsoil are major limitations for septic tank absorption fields.
- Low strength is a major limitation for local roads and streets.
- The seasonal wetness is a limitation for dwellings with basements and for small commercial buildings.

*Suitable management practices:*

- Using subsurface drains or open ditches lowers the water table around areas to be used for septic tank filter fields and dwellings.
- If the soil is to be used as a base for roads and streets,

mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

- Wetness can be reduced by providing drainage around dwellings and small commercial buildings.

## DkC—Dickson silt loam, 5 to 8 percent slopes

### Setting

*Landscape position:* Undulating ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 40 acres

*Major use:* Pasture

### Typical Profile

*Surface layer:*

0 to 6 inches, brown, very friable silt loam

*Subsurface layer:*

6 to 11 inches, brown, very friable silt loam

*Subsoil:*

11 to 22 inches, yellowish brown, friable silt loam

22 to 27 inches, fragipan that is yellowish brown, mottled, firm silt loam

27 to 33 inches, fragipan that is yellowish brown, mottled, firm silty clay loam

33 to 60 inches, yellowish red, firm clay

### Inclusions

- Small areas of the well drained Mountview soils on slightly higher knolls
- Small, intermingled areas of severely eroded soils on lower side slopes

### Important Soil Properties and Features

*Drainage class:* Moderately well drained

*Permeability:* Moderate above the fragipan, slow in the fragipan

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* Perched at a depth of 18 to 24 inches in winter and spring

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Suited

*General management considerations:*

- Most climatically adapted crops grow well if they are managed to control erosion.

- The seasonal wetness in winter and spring can restrict rooting depth and inhibit plant germination.

*Suitable management practices:*

- Planting cover crops, using a crop rotation system, returning crop residue to the soil, and using conservation tillage practices, such as no-till or contour stripcropping, reduce erosion and increase soil moisture.
- Planting crops later in the spring improves plant germination and early growth.

*Capability class:* IIIe

### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- A perched water table limits grazing for several days at a time during the winter and early spring.
- Hay yields may be reduced during dry years because of the limited amount of available water.

*Suitable management practices:*

- Grazing should be deferred until a period from late spring to early fall.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* White oak, cherrybark oak, southern red oak, and yellow-poplar

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- A seasonally perched water table and restricted permeability in the subsoil are major limitations for septic tank absorption fields.
- Low strength is a major limitation for local roads and streets.
- The seasonal wetness is a limitation for dwellings with basements and for small commercial buildings.

*Suitable management practices:*

- Using subsurface drains or open ditches lowers the

water table around areas to be used for septic tank filter fields and dwellings.

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Wetness can be reduced by providing drainage around dwellings and small commercial buildings.

### Eg—Egam silty clay loam, occasionally flooded

#### Setting

*Landscape position:* Flood plains

*Slope range:* 0 to 2 percent

*Shape of areas:* Long and narrow or oval

*Size of areas:* 5 to 80 acres

*Major use:* Cropland

#### Typical Profile

*Surface layer:*

0 to 9 inches, dark brown, friable silty clay loam

*Subsoil:*

9 to 27 inches, very dark brown, very firm silty clay

27 to 48 inches, dark brown, mottled, very firm silty clay

48 to 60 inches, brown, mottled, firm clay

#### Inclusions

- Small areas of soils that have a silt loam surface texture

#### Important Soil Properties and Features

*Drainage class:* Moderately well drained

*Permeability:* Moderately slow

*Available water capacity:* High

*Soil reaction:* Moderately acid to neutral

*Flood hazard:* Occasional for very brief periods in winter and spring

*High water table:* Seasonal, at a depth of 2.5 to 3 feet in winter and spring

*Depth to rock:* More than 5 feet

#### Use and Management

##### Cropland

*Suitability:* Suited

*General management considerations:*

- The seasonal wetness and flooding limit the production and harvest of some crops.

*Suitable management practices:*

- Planting short-season annuals, such as soybeans or grain sorghum, is recommended in areas of this soil because of the wetness and the hazard of flooding early in spring.

*Capability class:* IIw

### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- Grazing when the soil is wet compacts the surface layer and reduces the productivity of forages.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Grazing should be deferred until a period from late spring to early fall.

### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, water oak, black walnut, and loblolly pine

*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- Planting larger seedlings, bedding rows, and providing surface drainage increases the seedling survival rate.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to most residential and commercial uses because of the flooding, the seasonal wetness, and the permeability in the subsoil.

*Suitable management practices:*

- Dwellings, small commercial buildings, and roads and streets should be located in higher areas that are not subject to flooding or seasonal wetness.

### En—Ennis gravelly silt loam, occasionally flooded

#### Setting

*Landscape position:* Flood plains

*Slope range:* 0 to 2 percent

*Shape of areas:* Long and narrow

*Size of areas:* 5 to 80 acres

*Major uses:* Pasture, cropland

### Typical Profile

*Surface layer:*

0 to 7 inches, brown, very friable gravelly silt loam

*Subsoil:*

7 to 14 inches, dark yellowish brown, friable gravelly silt loam

14 to 40 inches, yellowish brown gravelly loam

*Substratum:*

40 to 60 inches, dark yellowish brown, friable very gravelly loam

### Inclusions

- Small areas of the excessively drained Riverby soils and the well drained Pruitton soils adjacent to stream channels
- Small areas of the moderately well drained Lobelville soils in slightly concave landscape positions
- The well drained Humphreys soils on slightly higher stream terraces

### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* Occasional for very brief periods in winter and spring

*High water table:* None

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Well suited

*General management considerations:*

- Most locally adapted crops can be grown, and good yields can be attained.
- Small grains can be damaged by the occasional flooding (fig. 9).

*Suitable management practices:*

- Planting crops later in the spring reduces the hazard of damage by flooding.
- Small grains should be planted in higher areas that are not subject to flooding.

*Capability class:* 1lw

#### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- Because of the flooding, only those hay and pasture



Figure 9.—An area of Ennis gravelly silt loam, occasionally flooded. Returning corn residue to the soil helps to improve tilth and conserves moisture.

plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* Black walnut, loblolly pine, yellow-poplar, American sycamore, sweetgum, and cherrybark oak

*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- Planting hardier seedlings and bedding rows increase the seedling survival rate.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to most residential and commercial uses because of the flooding.

*Suitable management practices:*

- Dwellings, small commercial buildings, and roads and

streets should be located in higher areas that are not subject to flooding.

## Gu—Guthrie silt loam, ponded

### Setting

*Landscape position:* Upland depressions and flats

*Slope range:* 0 to 2 percent

*Shape of areas:* Irregular

*Size of areas:* 5 to 40 acres

*Major use:* Woodland

### Typical Profile

*Surface layer:*

0 to 2 inches, dark grayish brown, very friable silt loam

*Subsurface layer:*

2 to 10 inches, light brownish gray, very friable silt loam

*Subsoil:*

10 to 31 inches, gray, mottled, friable silt loam

31 to 42 inches, fragipan that is gray, mottled, firm silt loam

42 to 60 inches, fragipan that is gray, mottled, firm silty clay loam

### Inclusions

- The moderately well drained Dickson soils and the somewhat poorly drained Taft soils in slightly higher, convex landscape positions

### Important Soil Properties and Features

*Drainage class:* Poorly drained

*Permeability:* Moderate above the fragipan, slow in the fragipan

*Available water capacity:* High

*Soil reaction:* Extremely acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* Ponded 1 to 2 feet above the surface for several weeks in winter and spring

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Poorly suited

*General management considerations:*

- Seasonal wetness and ponding limit the production and harvest of crops.

*Suitable management practices:*

- If this soil is currently used for crop production, planting later in the growing season and planting short-season

annuals, such as soybeans or grain sorghum, is recommended.

*Capability class:* Vw

#### Pasture and hayland

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to pasture and hay because of the ponding and seasonal wetness.

*Suitable management practices:*

- In small areas where the ponding is less severe, water-tolerant plants, such as tall fescue and white clover, can be grown as hay.
- Because of the excessive wetness, grazing should be deferred until summer and livestock should be removed from the pasture in fall.

#### Woodland

*Suitability:* Suited to water-tolerant trees

*Trees suitable for planting:* American sycamore, yellow-poplar, willow oak, swamp white oak, cherrybark oak, and sweetgum

*General management considerations:*

- The main limitations for the management of timber on this soil are the seedling mortality rate, the equipment limitation, and plant competition.

*Suitable management practices:*

- Planting water-tolerant species and bedding rows increase the seedling survival rate.
- Logging during dry periods in summer and early fall and using low-pressure ground equipment causes less damage to the soil and helps to maintain productivity.

#### Residential and commercial uses

*Suitability:* Unsited

*General management considerations:*

- This unit is unsited to residential and commercial uses because of the ponding and the excessive seasonal wetness.

## HuB—Humphreys gravelly silt loam, 2 to 5 percent slopes

### Setting

*Landscape position:* Foot slopes and stream terraces

*Shape of areas:* Oval

*Size of areas:* 10 to 40 acres

*Major uses:* Pasture, hayland, cropland

### Typical Profile

*Surface layer:*

0 to 10 inches, dark yellowish brown, very friable gravelly silt loam

*Subsoil:*

10 to 43 inches, strong brown, friable gravelly silty clay loam

*Substratum:*

43 to 60 inches, brown, massive, very gravelly silt loam

***Inclusions***

- Small, narrow strips of moderately well drained soils that have a fragipan and are on short side slopes and in small concave areas
- Areas of Minvale soils in slightly higher positions on foot slopes
- Small areas of Ennis soils along drainageways

***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* At a depth of 5.0 to 6.0 feet in winter and early spring

*Depth to rock:* More than 5 feet

***Use and Management*****Cropland**

*Suitability:* Well suited

*General management considerations:*

- A suitable conservation tillage system is needed to prevent damage from erosion.
- Grasses and legumes grow well if fertility levels and the content of lime are adequate.
- Coarse fragments on or near the surface of the soil can hinder tillage and reduce the amount of moisture available to plants during dry years.

*Suitable management practices:*

- Planting cover crops, cultivating on the contour, and using conservation tillage practices such as no-till or strip cropping increase soil moisture and reduce the hazard of erosion.
- Tillage can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; and returning crop residue to the soil.

*Capability class:* IIe

**Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- In dry years, the limited available water can reduce hay yields of moisture-sensitive crops, such as alfalfa.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if moisture is adequate and if other management needs, such as applications of lime and fertilizer, are met.

**Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, white ash, hickory, sweetgum, loblolly pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Well suited

*General management considerations:*

- Dwellings and small commercial buildings on foot slopes may experience seasonal wetness caused by seepage from the higher areas.

*Suitable management practices:*

- Subsurface tile drains should be used to divert seepwater around areas intended for use for septic tank filter fields and structures.

**HuC—Humphreys gravelly silt loam, 5 to 12 percent slopes*****Setting***

*Landscape position:* Foot slopes and stream terraces

*Shape of areas:* Long and narrow

*Size of areas:* 5 to 40 acres

*Major uses:* Pasture, hayland, cropland

***Typical Profile***

*Surface layer:*

0 to 10 inches, dark yellowish brown, very friable gravelly silt loam

*Subsoil:*

10 to 43 inches, strong brown, friable gravelly silty clay loam

*Substratum:*

43 to 60 inches, brown, massive, very gravelly silt loam

***Inclusions***

- Small, narrow strips of moderately well drained soils that

have a fragipan and are on short side slopes and in small concave areas

- Areas of Minvale soils in slightly higher positions on foot slopes
- Small areas of Ennis soils along drainageways

### **Important Soil Properties and Features**

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* At a depth of 5.0 to 6.0 feet in winter and early spring

*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.
- Coarse fragments on or near the surface of the soil can hinder tillage and reduce the amount of moisture available to plants during dry years.

*Suitable management practices:*

- Management practices, including no-till, contour farming, stripcropping, and growing cover crops, increase soil moisture and reduce the hazard of erosion.
- Tillage can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; and returning crop residue to the soil.

*Capability class:* IIIe

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- In dry years, the limited available water can reduce hay yields of moisture-sensitive crops, such as alfalfa.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if moisture is adequate and if other management needs, such as applications of lime and fertilizer, are met.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, white ash, hickory, sweetgum, and loblolly pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- Slope is a major limitation for small commercial buildings.
- The slope and the seasonal wetness, which results from seepage from the higher areas, are limitations for septic tank absorption fields, dwellings, and commercial buildings on foot slopes.
- The slope is a limitation for local roads and streets.

*Suitable management practices:*

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Subsurface tile drains should be used to divert seepwater around areas intended for use for septic tank filter fields and structures.
- Constructing roads and streets in the less sloping areas reduces the amount of cut and fill needed.

## **IrC—Ironcity gravelly silt loam, 5 to 12 percent slopes**

### **Setting**

*Landscape position:* Rolling ridgetops

*Shape of areas:* Irregular

*Size of areas:* 20 to 200 acres

*Major uses:* Pasture, hayland

### **Typical Profile**

*Surface layer:*

0 to 1 inch, brown, very friable gravelly silt loam

*Subsurface layer:*

1 to 7 inches, yellowish brown, very friable gravelly silt loam

*Subsoil:*

7 to 14 inches, yellowish brown, friable gravelly silt loam  
14 to 36 inches, strong brown, friable gravelly silty clay loam

36 to 52 inches, mottled strong brown, light yellowish brown, and red, firm gravelly silty clay

52 to 60 inches, mottled red, strong brown, and yellowish brown, firm very gravelly silty clay

### ***Inclusions***

- Small areas of Mountview soils on broader ridgetops
- Areas of Biffle soils on shoulder slopes
- Small areas of the moderately well drained Lax soils on less sloping ridgetops
- Areas of soils that have a silt loam surface layer and are in swales
- Small areas of severely eroded soils that are on knolls and shoulder slopes and have a clayey surface texture

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.
- Coarse fragments on or near the surface of the soil can hinder tillage and reduce the amount of moisture available to plants during dry years.

*Suitable management practices:*

- Management practices, including no-till, contour farming, stripcropping, and growing cover crops, increase soil moisture and reduce the hazard of erosion.
- Tillage can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; and returning crop residue to the soil.

*Capability class:* IIIe

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- In dry years, the limited available water can reduce hay yields of moisture-sensitive crops, such as alfalfa.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

- Alfalfa grows well and produces good yields if moisture is adequate and if other management needs, such as applications of lime and fertilizer, are met.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Black walnut, white oak, southern red oak, hickory, chestnut oak, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The slope is a limitation for small commercial buildings, septic tank absorption fields, and dwellings.
- The permeability in the subsoil is a limitation for septic tank absorption fields.
- The slope and low strength are limitations for local roads and streets.

*Suitable management practices:*

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Constructing roads and streets in the less sloping areas reduces the amount of cut and fill needed.

## **IrD—Ironcity gravelly silt loam, 12 to 20 percent slopes**

### ***Setting***

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 20 to 100 acres

*Major uses:* Woodland, pasture

### ***Typical Profile***

*Surface layer:*

0 to 1 inch, brown, very friable gravelly silt loam

**Subsurface layer:**

1 to 7 inches, yellowish brown, very friable gravelly silt loam

**Subsoil:**

7 to 14 inches, yellowish brown, friable gravelly silt loam

14 to 36 inches, strong brown, friable gravelly silty clay loam

36 to 52 inches, mottled strong brown, light yellowish brown, and red, firm gravelly silty clay

52 to 60 inches, mottled red, strong brown, and yellowish brown, firm very gravelly silty clay

**Inclusions**

- Small areas of Mountview soils on shoulder slopes
- Areas of Biffle soils in lower positions on hillsides

**Important Soil Properties and Features**

**Drainage class:** Well drained

**Permeability:** Moderate

**Available water capacity:** Moderate

**Soil reaction:** Very strongly acid to strongly acid, except in areas where lime has been added

**Flood hazard:** None

**High water table:** None

**Depth to rock:** More than 5 feet

**Use and Management****Cropland**

**Suitability:** Poorly suited

**General management considerations:**

- This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

**Suitable management practices:**

- Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.
- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

**Capability class:** IVe

**Pasture and hayland**

**Suitability:** Suited

**General management considerations:**

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

**Suitable management practices:**

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

**Woodland**

**Suitability:** Well suited

**Trees suitable for planting:** Black walnut, white oak, southern red oak, hickory, chestnut oak, loblolly pine, and shortleaf pine

**General management considerations:**

- The main limitations for the management of timber are the hazard of erosion, the restricted use of equipment, and plant competition.

**Suitable management practices:**

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

**Residential and commercial uses**

**Suitability:** Poorly suited

**General management considerations:**

- The slope is a major limitation for small commercial buildings, septic tank absorption fields, and dwellings.
- The permeability in the subsoil is a limitation for septic tank absorption fields.
- The slope and the low strength are limitations for local roads and streets.

**Suitable management practices:**

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Constructing roads and streets in the less sloping areas reduces the amount of cut and fill needed.

**LaB—Lax silt loam, 2 to 5 percent slopes****Setting**

**Landscape position:** Undulating ridgetops

**Shape of areas:** Irregular

**Size of areas:** 10 to 200 acres

**Major uses:** Pasture, woodland

### **Typical Profile**

*Surface layer:*

0 to 5 inches, brown, very friable silt loam

*Subsoil:*

5 to 13 inches, strong brown, friable silty clay loam

13 to 27 inches, yellowish brown, friable silty clay loam

27 to 39 inches, fragipan that is brownish yellow, very firm, mottled gravelly silty clay loam

39 to 49 inches, fragipan that is yellowish brown, very firm, mottled very gravelly silty clay loam

*Substratum:*

49 to 60 inches, yellowish red, mottled, very firm very gravelly silty clay

### **Inclusions**

- Small areas of Dickson soils and the somewhat poorly drained Taft soils in saddles
- Areas of the well drained Brandon soils on shoulder slopes and narrow ridgetops

### **Important Soil Properties and Features**

*Drainage class:* Moderately well drained

*Permeability:* Moderate above the fragipan, slow in the fragipan

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* Perched above the fragipan, at a depth of 1.5 to 2.5 feet, in winter and early spring

*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.
- Plants may experience moisture stress during dry periods in summer because of the limited available water.
- The seasonal wetness in winter and spring can restrict rooting depth and inhibit plant germination.

*Suitable management practices:*

- Planting cover crops, using a crop rotation system, returning crop residue to the soil, and using conservation tillage practices reduce erosion and increase soil moisture.
- Planting crops later in the spring improves plant germination and early growth.

*Capability class:* Ie

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- A perched water table limits grazing for several days at a time during the winter and early spring.
- Hay yields may be moderate or low during dry years because of the limited amount of available water.

*Suitable management practices:*

- Grazing should be deferred until a period from late spring to early fall.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* White oak, southern red oak, chesnut oak, hickory, eastern redcedar, and Virginia pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- A seasonally perched water table and restricted permeability in the subsoil are major limitations for septic tank absorption fields.
- Seasonal wetness and seepage are the major limitations for dwellings with basements.
- Low strength is a major limitation for local roads and streets.
- The seasonal wetness is a limitation for dwellings without basements and for small commercial buildings.

*Suitable management practices:*

- Using subsurface drains or open ditches lowers the water table around areas to be used for septic tank filter fields and dwellings.
- Increasing the size of the absorption field or adding suitable fill material on the surface helps to overcome the restricted permeability.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Wetness can be reduced by providing drainage and

diverting runoff away from the foundations of dwellings and small commercial buildings.

## LaC—Lax silt loam, 5 to 12 percent slopes

### Setting

*Landscape position:* Rolling ridgetops and side slopes

*Shape of areas:* Irregular

*Size of areas:* 10 to 40 acres

*Major uses:* Pasture, cropland

### Typical Profile

*Surface layer:*

0 to 5 inches, brown, very friable silt loam

*Subsoil:*

5 to 13 inches, strong brown, friable silty clay loam

13 to 27 inches, yellowish brown, friable silty clay loam

27 to 39 inches, fragipan that is brownish yellow, very firm, mottled gravelly silty clay loam

39 to 49 inches, fragipan that is yellowish brown, very firm, mottled very gravelly silty clay loam

*Substratum:*

49 to 60 inches, yellowish red, mottled, very firm very gravelly silty clay

### Inclusions

- Areas of the well drained Brandon soils on shoulder slopes
- Small areas of Dickson soils in saddles

### Important Soil Properties and Features

*Drainage class:* Moderately well drained

*Permeability:* Moderate above the fragipan, slow in the fragipan

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* Perched above the fragipan, at a depth of 1.5 to 2.5 feet, in winter and early spring

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.
- Plants may experience moisture stress during dry periods in summer because of the limited available water.

- The seasonal wetness in winter and spring can restrict rooting depth and inhibit plant germination.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Planting cover crops, using a crop rotation system, returning crop residue to the soil, and using conservation tillage practices increase soil moisture.
- Planting crops later in the season improves plant germination and early growth.

*Capability class:* IIIe

#### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- A perched water table limits grazing for several days at a time during the winter and early spring.
- Hay yields may be moderate or low during dry years because of the limited amount of available water.

*Suitable management practices:*

- Grazing should be deferred until a period from late spring to early fall.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* White oak, southern red oak, chesnut oak, hickory, eastern redcedar, and Virginia pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion and plant competition.

*Suitable management practices:*

- Logging roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- A seasonally perched water table and restricted permeability in the subsoil are major limitations for septic tank absorption fields.
- Seasonal wetness and seepage are the major limitations for dwellings with basements.
- Low strength is a major limitation for local roads and streets.

- The slope and the seasonal wetness are major limitations for small commercial buildings.
- The seasonal wetness and the slope are limitations for dwellings without basements.

*Suitable management practices:*

- Using subsurface drains or open ditches lowers the water table around areas to be used for septic tank filter fields and dwellings with basements.
- Increasing the size of the absorption field or adding suitable fill material on the surface helps to overcome the restricted permeability.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

## **Le—Lee gravelly silt loam, occasionally flooded**

### ***Setting***

*Landscape position:* Flood plains

*Slope range:* 0 to 2 percent

*Shape of areas:* Long and narrow and oval

*Size of areas:* 10 to 50 acres

*Major uses:* Woodland, pasture

### ***Typical Profile***

*Surface layer:*

0 to 7 inches, dark grayish brown, very friable gravelly silt loam

*Subsoil:*

7 to 13 inches, gray, mottled, friable gravelly silt loam

13 to 34 inches, gray, mottled, friable gravelly silt loam

*Substratum:*

34 to 60 inches, gray, mottled, friable very gravelly silt loam

### ***Inclusions***

- Small areas of the excessively drained Riverby soils and the well drained Pruitton soils on natural levees adjacent to stream channels
- Small areas of the moderately well drained Lobelville soils in slightly higher landscape positions

### ***Important Soil Properties and Features***

*Drainage class:* Poorly drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* Occasional for very brief periods in winter and spring; some areas are ponded for several days following overbank flooding

*High water table:* Seasonal, within a depth of 1 foot in winter and spring

*Depth to rock:* More than 5 feet

## ***Use and Management***

### **Cropland**

*Suitability:* Poorly suited

*General management considerations:*

- Flooding is a hazard in spring, and it can damage row crops and small grains.
- Planting, cultivating, and harvesting operations can be delayed because of the wetness and flooding.

*Suitable management practices:*

- Planting short-season annuals, such as soybeans or grain sorghum, later in the spring is recommended.
- Small grains should be planted in higher areas that are not subject to flooding.

*Capability class:* IIIw

### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- Because of the flooding, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- Grazing when the soil is wet compacts the surface layer and reduces the productivity of forages.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### **Woodland**

*Suitability:* Well suited to water-tolerant species

*Trees suitable for planting:* Yellow-poplar, American sycamore, sweetgum, cherrybark oak, water oak, and green ash

*General management considerations:*

- The main limitations for the management of timber are the restricted use of equipment, the seedling mortality rate, and plant competition.

*Suitable management practices:*

- Harvesting and planting during dry periods in summer and early fall and using low-pressure ground equipment cause less damage to the soil and help to maintain productivity.
- Planting larger, water-tolerant seedlings, bedding rows, and providing surface drainage increase the seedling survival rate.
- Site preparation, such as chopping, burning, and

applying herbicide, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to residential and commercial uses because of the flooding and excessive wetness.

## Ln—Lindell silt loam, occasionally flooded

### Setting

*Landscape position:* Flood plains

*Slope range:* 0 to 2 percent

*Shape of areas:* Long and narrow or oval

*Size of areas:* 5 to 40 acres

*Major use:* Woodland

### Typical Profile

*Surface layer:*

0 to 9 inches, yellowish brown, very friable silt loam

*Subsoil:*

9 to 23 inches, dark yellowish brown, friable silt loam

23 to 39 inches, yellowish brown, mottled, friable silt loam

*Substratum:*

39 to 60 inches, light brownish gray, mottled, friable loam

### Inclusions

- Small, concave areas of soils that are adjacent to the Tennessee River and that pond water for several days
- Small areas of somewhat poorly drained and poorly drained soils in shallow depressions

### Important Soil Properties and Features

*Drainage class:* Moderately well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Moderately acid to neutral

*Flood hazard:* Occasional for very brief periods in winter and spring

*High water table:* Seasonal, at a depth of 2 to 3 feet in winter and spring

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Well suited

*General management considerations:*

- Most climatically adapted crops can be grown, and good yields can be attained.
- Small grains can be damaged by the occasional flooding.

*Suitable management practices:*

- Planting crops later in the spring reduces the hazard of damage by flooding.
- Small grains should be planted in higher areas that are not subject to flooding.

*Capability class:* llw

#### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness and flooding, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- The seasonal wetness limits grazing for several days at a time during the winter and early spring.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Grazing should be deferred until a period from late spring to early fall.

#### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* Black walnut, yellow-poplar, American sycamore, sweetgum, and cherrybark oak

*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- Planting larger seedlings, bedding rows, and providing surface drainage increase the seedling survival rate.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- The flooding and seasonal wetness are limitations for all residential and commercial uses.

*Suitable management practices:*

- Dwellings, small commercial buildings, and roads and streets should be located in higher areas that are not subject to flooding or seasonal wetness.

## Lo—Lobelville gravelly silt loam, occasionally flooded

### Setting

*Landscape position:* Flood plains

*Slope range:* 0 to 2 percent

*Shape of areas:* Irregular

*Size of areas:* 10 to 60 acres

*Major uses:* Pasture, cropland

### Typical Profile

*Surface layer:*

0 to 7 inches, brown, very friable gravelly silt loam

*Subsoil:*

7 to 19 inches, yellowish brown, mottled, friable gravelly loam

19 to 25 inches, yellowish brown, mottled, friable gravelly silt loam

25 to 35 inches, gray, mottled, friable gravelly clay loam

35 to 41 inches, gray, mottled, friable gravelly loam

*Substratum:*

34 to 60 inches, gray, mottled, friable extremely gravelly sandy loam

### Inclusions

- Small areas of the excessively drained Riverby soils and the well drained Ennis soils on natural levees adjacent to stream channels
- Small, intermingled areas of the Lindell soils and the poorly drained Lee soils

### Important Soil Properties and Features

*Drainage class:* Moderately well drained

*Permeability:* Moderate in the upper part, moderately rapid in the lower part

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* Occasional for very brief periods in winter and spring

*High water table:* Seasonal, at a depth of 2 to 3 feet in winter and spring

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Well suited

*General management considerations:*

- Flooding is a hazard in spring, and it can damage row crops and small grains.

*Suitable management practices:*

- Planting crops later in the spring reduces the hazard of damage by flooding.
- Small grains should be planted in higher areas that are not subject to flooding.

*Capability class:* 1lw

#### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness and flooding, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- The seasonal wetness limits grazing for several days at a time during the winter and early spring.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Grazing should be deferred until a period from late spring to early fall.

#### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* Black walnut, yellow-poplar,

American sycamore, sweetgum, and cherrybark oak

*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- Planting larger seedlings and providing surface drainage increase the seedling survival rate.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- The flooding and seasonal wetness are limitations for all residential and commercial uses.

*Suitable management practices:*

- Dwellings, small commercial buildings, and roads and streets should be located in higher areas that are not subject to flooding or seasonal wetness.

## LuB—Luverne fine sandy loam, 2 to 5 percent slopes

### Setting

*Landscape position:* Undulating upland ridgetops

*Shape of areas:* Irregular  
*Size of areas:* 10 to 25 acres  
*Major uses:* Pasture, cropland

### **Typical Profile**

*Surface layer:*  
 0 to 5 inches, dark grayish brown, very friable fine sandy loam

*Subsurface layer:*  
 5 to 11 inches, yellowish brown, very friable fine sandy loam

*Subsoil:*  
 11 to 24 inches, yellowish red, firm clay loam  
 24 to 30 inches, yellowish red, firm clay loam

*Substratum:*  
 30 to 60 inches, red, very friable loamy sand that has strata of yellowish red and brownish yellow sandy loam

### **Inclusions**

- Small areas of soils that have a silt loam surface texture
- Small areas of severely eroded soils that are on knolls and shoulder slopes and that have a clay loam surface texture

### **Important Soil Properties and Features**

*Drainage class:* Well drained  
*Permeability:* Moderately slow  
*Available water capacity:* Moderate  
*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added  
*Flood hazard:* None  
*High water table:* None  
*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Suited  
*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.
- The soil can be droughty during dry years, and yields are reduced.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillth can be improved or maintained and soil moisture can be increased by using a cropping system that includes grasses, legumes, or grass-legume mixtures;

rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture and hay yields may be reduced during dry years because of the limited available water.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Drought-tolerant species, such as improved bermudagrass, should be selected.

#### **Woodland**

*Suitability:* Well suited to drought-tolerant species

*Trees suitable for planting:* Loblolly pine, white oak, mockernut hickory, chesnut oak, and eastern redcedar

*General management considerations:*

- The main limitations for the management of timber are the restricted use of equipment and plant competition.

*Suitable management practices:*

- Wheeled and tracked equipment can be used, but planting and harvesting operations should be conducted only in dry periods from midsummer through early fall.
- Competing vegetation can be reduced by using controlled burning, applying herbicide, and girdling or cutting unwanted trees.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil is a limitation for septic tank filter fields.
- Low strength is a major limitation for local roads and streets.
- The shrink-swell potential is a limitation for dwellings and small commercial buildings.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.

## LuC—Luverne fine sandy loam, 5 to 12 percent slopes

### Setting

*Landscape position:* Rolling upland ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 40 acres

*Major use:* Woodland

### Typical Profile

*Surface layer:*

0 to 5 inches, dark grayish brown, very friable fine sandy loam

*Subsurface layer:*

5 to 11 inches, yellowish brown, very friable fine sandy loam

*Subsoil:*

11 to 24 inches, yellowish red, firm clay loam

24 to 30 inches, yellowish red, firm clay loam

*Substratum:*

30 to 60 inches, red, very friable loamy sand that has strata of yellowish red and brownish yellow sandy loam

### Inclusions

- Small areas of the well drained Saffell soils on shoulder slopes
- Small areas of severely eroded soils that are on knolls and shoulders and that have a clay loam surface texture

### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Poorly suited

*General management considerations:*

- This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Suitable management practices:*

- Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

#### Pasture and hayland

*Suitability:* Suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- Drought-tolerant species, such as improved bermudagrass, should be selected.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### Woodland

*Suitability:* Well suited to drought-tolerant species

*Trees suitable for planting:* Loblolly pine, white oak,

mockernut hickory, chesnut oak, and eastern redcedar

*General management considerations:*

- The main limitations for the management of timber are the restricted use of equipment and plant competition.

*Suitable management practices:*

- Wheeled and tracked equipment can be used, but planting and harvesting operations should be conducted only in dry periods from midsummer through early fall.
- Competing vegetation can be reduced by using controlled burning, applying herbicide, and girdling or cutting unwanted trees.

#### Residential and commercial uses

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil is a limitation for septic tank filter fields.
- Low strength and slope are major limitations for local roads and streets.
- The shrink-swell potential and the slope are limitations for dwellings and small commercial buildings.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Backfilling deep cuts with material that has a low shrink-

swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

## LuD—Luverne fine sandy loam, 12 to 20 percent slopes

### Setting

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 40 acres

*Major use:* Woodland

### Typical Profile

*Surface layer:*

0 to 5 inches, dark grayish brown, very friable fine sandy loam

*Subsurface layer:*

5 to 11 inches, yellowish brown, very friable fine sandy loam

*Subsoil:*

11 to 24 inches, yellowish red, firm clay loam

24 to 30 inches, yellowish red, firm clay loam

*Substratum:*

30 to 60 inches, red, very friable loamy sand that has strata of yellowish red and brownish yellow sandy loam

### Inclusions

- Small areas of the well drained Saffell soils on shoulder slopes
- Small areas of severely eroded soils that are in lower positions on hillsides and that have a clay loam surface texture

### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid or strongly acid

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Unsited

*General management considerations:*

- This map unit is unsited to use as cropland because of

the irregular size and shape of the areas, the severe hazard of erosion, the slope, and the limited available water during dry years.

*Capability class:* V1e

#### Pasture and hayland

*Suitability:* Poorly suited

*General management considerations:*

- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- The low amount of available water reduces yields during dry summers.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Avoiding overgrazing, especially in the sloping areas, reduces the hazard of erosion.
- Forage plants that can tolerate droughty conditions, such as improved bermudagrass, should be selected.

#### Woodland

*Suitability:* Suited to drought-tolerant species

*Trees suitable for planting:* Loblolly pine, white oak, mockernut hickory, chesnut oak, and eastern redcedar

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the restricted use of equipment, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked equipment can be used in the moderately steep areas, but planting and harvesting operations should be conducted only in dry periods from midsummer through early fall.
- Competing vegetation can be reduced by using controlled burning, applying herbicide, and girdling or cutting unwanted trees.

#### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the shrink-swell potential are major limitations for dwellings and small commercial buildings.
- Low strength and slope are major limitations for roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area

and placing filter lines on the contour help to overcome the restricted permeability and the slope.

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

### **MnD—Minvale gravelly silt loam, 12 to 20 percent slopes**

#### ***Setting***

*Landscape position:* Foot slopes

*Shape of areas:* Long and narrow

*Size of areas:* 10 to 70 acres

*Major uses:* Woodland, pasture

#### ***Typical Profile***

*Surface layer:*

0 to 5 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

5 to 10 inches, yellowish brown, friable gravelly silt loam

*Subsoil:*

10 to 49 inches, strong brown, friable gravelly silty clay loam

49 to 60 inches, yellowish red, friable gravelly silty clay loam

#### ***Inclusions***

- Small, intermingled areas of well drained soils that are on the lower part of hillsides and have more than 35 percent fragments in the surface layer and subsoil
- Small areas of the Humphreys soils on toe slopes and fans
- Areas of soils that are on lower foot slopes and that have a dense, gravelly fragipan within a depth of 4 feet

#### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Poorly suited

*General management considerations:*

- This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Suitable management practices:*

- Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.
- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

#### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, black walnut, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- The slope is a major limitation for small commercial buildings and dwellings.
- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the low strength are major limitations for local roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## **MnE—Minvale gravelly silt loam, 20 to 30 percent slopes**

### **Setting**

*Landscape position:* Foot slopes

*Shape of areas:* Long and narrow

*Size of areas:* 10 to 70 acres

*Major use:* Woodland

### **Typical Profile**

*Surface layer:*

0 to 5 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

5 to 10 inches, yellowish brown, friable gravelly silt loam

*Subsoil:*

10 to 49 inches, strong brown, friable gravelly silty clay loam

49 to 60 inches, yellowish red, friable gravelly silty clay loam

### **Inclusions**

- Small areas of Ironcity soils in higher positions on hillsides
- Small, intermingled areas of well drained soils that are on the lower part of hillsides and have more than 35 percent fragments in the surface layer and subsoil
- Areas of soils that are on lower foot slopes and that have a dense, gravelly fragipan within a depth of 4 feet

### **Important Soil Properties and Features**

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

## **Use and Management**

### **Cropland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to use as cropland because of the slope, the hazard of erosion, and the size and shape of the unit.

*Capability class:* V1e

### **Pasture and hayland**

*Suitability:* Poorly suited as hayland; suited to pasture in some less sloping areas

*General management considerations:*

- The slope, the high runoff rate, and the hazard of erosion are limitations for pasture management.
- A permanent vegetative cover is needed to prevent erosion.
- The high runoff rate can cause a moisture deficit in late summer, and stands of less hardy plants may suffer from moisture stress.

*Suitable management practices:*

- Mixtures of hardy forage plants, such as tall fescue with clover or sericea lespedeza, are adapted forage plants.
- Reseeding the pasture may be necessary if the plant cover does not provide a stand of desirable species adequate for forage and erosion control.
- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.

### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, black walnut, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Steep yarding paths, skid trails, fire breaks, and landings are subject to rilling and gullying unless they are provided with adequate water bars, are protected by plant cover, or both.
- Wheeled and tracked equipment can be used in the moderately steep areas, but more specialized harvesting methods may be required in the steeper areas.

- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to residential and commercial uses because of the slope and the hazard of erosion.

## **MoB—Mountview silt loam, 2 to 5 percent slopes**

### ***Setting***

*Landscape position:* Undulating ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 100 acres

*Major use:* Pasture

### ***Typical Profile***

*Surface layer:*

0 to 5 inches, brown, very friable silt loam

*Subsurface layer:*

5 to 13 inches, yellowish brown, very friable silt loam

*Subsoil:*

13 to 24 inches, strong brown, friable silty clay loam

24 to 43 inches, red, mottled, friable silty clay loam

43 to 60 inches, red, mottled, firm silty clay

### ***Inclusions***

- Small areas of the moderately well drained Dickson soils in saddles and slight depressions
- Ironcity soils in sloping areas that are adjacent to steeper side slopes

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- Most locally adapted crops can be grown, and good yields can be attained.

- A suitable conservation tillage system is needed to prevent damage from erosion.

*Suitable management practices:*

- No-till planting, contour farming, and stripcropping can help to control erosion and maintain productivity.

*Capability class:* 11e

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- This soil has no significant limitations for forage production if erosion is controlled.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- Low strength is a major limitation for local roads and streets.
- The permeability in the lower part of the subsoil is a limitation for septic tank absorption fields.
- The shrink-swell potential in the lower part of the subsoil is a limitation for dwellings with basements.

*Suitable management practices:*

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Increasing the size of the absorption field helps to overcome the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.

## MoB2—Mountview silt loam, 2 to 5 percent slopes, eroded

### Setting

*Landscape position:* Undulating ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 40 acres

*Major uses:* Cropland, pasture

### Typical Profile

*Surface layer:*

0 to 5 inches, dark yellowish brown, very friable silt loam

*Subsoil:*

5 to 16 inches, strong brown, friable silty clay loam

16 to 24 inches, strong brown, mottled, friable silty clay loam

24 to 60 inches, red, mottled, firm silty clay loam

### Inclusions

- Small areas of the moderately well drained Dickson soils in saddles and slight depressions
- Ironcity soils in sloping areas that are adjacent to steeper side slopes

### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### Use and Management

#### Cropland

*Suitability:* Well suited

*General management considerations:*

- Most locally adapted crops can be grown, and good yields can be attained.
- A suitable conservation tillage system is needed to prevent damage from erosion.

*Suitable management practices:*

- No-till planting, contour farming, and stripcropping can help to control erosion and maintain productivity.

*Capability class:* 1Ie

#### Pasture and hayland

*Suitability:* Well suited

*General management considerations:*

- This soil has no significant limitations for forage production if erosion is controlled.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

#### Woodland

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### Residential and commercial uses

*Suitability:* Suited

*General management considerations:*

- Low strength is a major limitation for local roads and streets.
  - The permeability in the lower part of the subsoil is a limitation for septic tank absorption fields.
  - The shrink-swell potential in the lower part of the subsoil is a limitation for dwellings with basements.
- Suitable management practices:*
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
  - Increasing the size of the absorption field helps to overcome the restricted permeability.
  - Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.

## MoC—Mountview silt loam, 5 to 12 percent slopes

### Setting

*Landscape position:* Rolling ridgetops and side slopes

*Shape of areas:* Irregular

*Size of areas:* 10 to 50 acres

*Major uses:* Pasture, hayland

### Typical Profile

*Surface layer:*

0 to 5 inches, brown, very friable silt loam

*Subsurface layer:*

5 to 13 inches, yellowish brown, very friable silt loam

*Subsoil:*

13 to 24 inches, strong brown, friable silty clay loam

24 to 43 inches, red, mottled, friable silty clay loam

43 to 60 inches, red, mottled, firm silty clay

***Inclusions***

- Small areas of the moderately well drained Dickson soils in saddles and slight depressions
- Ironcity soils in sloping areas that are adjacent to steeper side slopes

***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

***Use and Management*****Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillth can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

**Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

**Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion and plant competition.

*Suitable management practices:*

- Limiting the use of equipment for harvesting and planting operations when the soil is wet and carefully designing access roads and skid trails reduce the hazard of erosion.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The slope is a major limitation for small commercial buildings.
- Low strength is a major limitation for local roads and streets.
- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the shrink-swell potential in the lower part of the subsoil are limitations for dwellings.

*Suitable management practices:*

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Increasing the size of the absorption field and placing field lines on the contour help to overcome the slope and the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.

**MoC2—Mountview silt loam, 5 to 12 percent slopes, eroded*****Setting***

*Landscape position:* Rolling ridgetops and side slopes

*Shape of areas:* Irregular

*Size of areas:* 10 to 60 acres

*Major uses:* Cropland, pasture

### **Typical Profile**

*Surface layer:*

0 to 5 inches, dark yellowish brown, very friable silt loam

*Subsoil:*

5 to 16 inches, strong brown, friable silty clay loam

16 to 24 inches, strong brown, mottled, friable silty clay loam

24 to 60 inches, red, mottled, firm silty clay loam

### **Inclusions**

- Small areas of the moderately well drained Dickson soils in saddles and slight depressions
- Ironcity soils in sloping areas that are adjacent to steeper side slopes

### **Important Soil Properties and Features**

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillth can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided

with adequate amounts of lime and fertilizer and if other management needs are met.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion and plant competition.

*Suitable management practices:*

- Limiting the use of equipment for harvesting and planting operations when the soil is wet and carefully designing access roads and skid trails reduce the hazard of erosion.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The slope is a major limitation for small commercial buildings.
- Low strength is a major limitation for local roads and streets.
- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.
- The slope and the shrink-swell potential in the lower part of the subsoil are limitations for dwellings.

*Suitable management practices:*

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Increasing the size of the absorption field and placing field lines on the contour help to overcome the slope and the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.

### **PkB—Pickwick silt loam, 2 to 5 percent slopes**

#### **Setting**

*Landscape position:* Undulating high stream terraces

*Shape of areas:* Oval

*Size of areas:* 10 to 30 acres  
*Major uses:* Pasture, cropland

### **Typical Profile**

*Surface layer:*  
 0 to 5 inches, brown, very friable silt loam

*Subsurface layer:*  
 5 to 9 inches, strong brown, friable silty clay loam

*Subsoil:*  
 9 to 40 inches, yellowish red, friable silty clay loam  
 40 to 57 inches, red, friable silty clay loam  
 57 to 60 inches, red, friable gravelly silty clay loam

### **Inclusions**

- Small areas of Minvale soils on convex knolls
- Small areas of the moderately well drained Dickson soils in small, concave swales

### **Important Soil Properties and Features**

*Drainage class:* Well drained  
*Permeability:* Moderate  
*Available water capacity:* High  
*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added  
*Flood hazard:* None  
*High water table:* None  
*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Well suited  
*General management considerations:*

- Most locally adapted crops can be grown, and good yields can be attained.
- This soil is susceptible to erosion, which can result in the removal of valuable topsoil.

*Suitable management practices:*

- No-till planting, contour farming, and stripcropping can help to control erosion and maintain productivity.

*Capability class:* IIe

#### **Pasture and hayland**

*Suitability:* Well suited  
*General management considerations:*

- This soil has no significant limitations for forage production if erosion is controlled.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided

with adequate amounts of lime and fertilizer and if other management needs are met.

#### **Woodland**

*Suitability:* Well suited  
*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine  
*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Well suited  
*General management considerations:*

- Low strength is a limitation for local roads and streets.
- The permeability in the subsoil is a limitation for septic tank absorption fields.

*Suitable management practices:*

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Increasing the size of the absorption field helps to overcome the restricted permeability.

### **PkC—Pickwick silt loam, 5 to 12 percent slopes**

#### **Setting**

*Landscape position:* Rolling high stream terraces  
*Shape of areas:* Oval  
*Size of areas:* 10 to 30 acres  
*Major uses:* Pasture, cropland

#### **Typical Profile**

*Surface layer:*  
 0 to 5 inches, brown, very friable silt loam

*Subsurface layer:*  
 5 to 9 inches, strong brown, friable silty clay loam

*Subsoil:*  
 9 to 40 inches, yellowish red, friable silty clay loam  
 40 to 57 inches, red, friable silty clay loam  
 57 to 60 inches, red, friable gravelly silty clay loam

#### **Inclusions**

- Small areas of Minvale soils on foot slopes

- Small areas of the moderately well drained Dickson soils in small, concave swales

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillth can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and

applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- Low strength is a major limitation for local roads and streets.
- The permeability in the lower part of the subsoil and the slope are limitations for septic tank absorption fields.
- The slope is a limitation for dwellings and small commercial buildings.

*Suitable management practices:*

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Increasing the size of the absorption field and placing field lines on the contour help to overcome the slope and the restricted permeability.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

### **PkC3—Pickwick silty clay loam, 5 to 12 percent slopes, severely eroded**

#### ***Setting***

*Landscape position:* Rolling high stream terraces

*Shape of areas:* Oval

*Size of areas:* 10 to 40 acres

*Major uses:* Pasture, woodland

#### ***Typical Profile***

*Surface layer:*

0 to 5 inches, strong brown, friable silty clay loam

*Subsoil:*

5 to 12 inches, yellowish red, friable silty clay loam

12 to 34 inches, red, friable silty clay loam

34 to 60 inches, red, mottled, friable silty clay loam

#### ***Inclusions***

- Small areas of Minvale soils on the higher foot slopes

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None  
*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Poorly suited

• This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Suitable management practices:*

• Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.

• Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

#### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

• If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

• The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

• The main limitation for the management of timber is plant competition.

*Suitable management practices:*

• Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

• Low strength is a major limitation for local roads and streets.

• The permeability in the lower part of the subsoil and the slope are limitations for septic tank absorption fields.

• The slope is a limitation for dwellings and small commercial buildings.

*Suitable management practices:*

• If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

• Increasing the size of the absorption field and placing

field lines on the contour help to overcome the slope and the restricted permeability.

• Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

### **PkD—Pickwick silt loam, 12 to 20 percent slopes**

#### ***Setting***

*Landscape position:* Escarpments of high stream terraces

*Shape of areas:* Irregular

*Size of areas:* 10 to 20 acres

*Major uses:* Woodland, pasture

#### ***Typical Profile***

*Surface layer:*

0 to 5 inches, brown, very friable silt loam

*Subsurface layer:*

5 to 9 inches, strong brown, friable silty clay loam

*Subsoil:*

9 to 40 inches, yellowish red, friable silty clay loam

40 to 57 inches, red, friable silty clay loam

57 to 60 inches, red, friable gravelly silty clay loam

#### ***Inclusions***

• Small areas of Minvale soils on foot slopes

#### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

#### ***Use and Management***

##### **Cropland**

*Suitability:* Poorly suited

*General management considerations:*

• This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Suitable management practices:*

• Areas used as cropland should only be cultivated on the contour, using a rotation system in which the land remains in a vegetative cover for several seasons following cultivation.

• Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.

*Capability class:* IVe

### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- Low strength is a major limitation for local roads and streets.
- The permeability in the lower part of the subsoil and the slope are limitations for septic tank absorption fields.
- The slope is a limitation for dwellings and small commercial buildings.

*Suitable management practices:*

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser

textured material will increase the soil's strength and stability.

- Increasing the size of the absorption field and placing field lines on the contour help to overcome the slope and the restricted permeability.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

## **PkD3—Pickwick silty clay loam, 12 to 20 percent slopes, severely eroded**

### ***Setting***

*Landscape position:* Escarpments of high stream terraces

*Shape of areas:* Irregular

*Size of areas:* 10 to 20 acres

*Major uses:* Woodland, pasture

### ***Typical Profile***

*Surface layer:*

0 to 5 inches, strong brown, friable silty clay loam

*Subsoil:*

5 to 12 inches, yellowish red, friable silty clay loam

12 to 34 inches, red, friable silty clay loam

34 to 60 inches, red, mottled, friable silty clay loam

### ***Inclusions***

- Small areas of Minvale soils on foot slopes

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Soil reaction:* Very strongly acid to strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Poorly suited

*General management considerations:*

- This soil should not be used continuously as cropland because of the slope and the high potential for erosion.

*Capability class:* VIe

#### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.

*Suitable management practices:*

- Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### Woodland

*Suitability:* Suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- Low strength is a major limitation for local roads and streets.
- The permeability in the lower part of the subsoil and the slope are limitations for septic tank absorption fields.
- The slope is a limitation for dwellings and small commercial buildings.

*Suitable management practices:*

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Planning and designing local roads and streets in the less sloping areas reduces the amount of cut and fill required, and mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Increasing the size of the absorption field and placing field lines on the contour help to overcome the slope and the restricted permeability.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

### PM—Pits, mine

This map unit consists mainly of abandoned, unreclaimed iron mines, limestone quarries, and borrow pits. Pits that are 6 to 40 feet deep and have nearly vertical walls make up most areas of the unit. Ponded water is in some Pits. The areas range from 6 to 40 acres.

Included in this unit are small, undisturbed areas of Mountview soils; areas of red, clayey soils; and areas of gravelly soils. These soils are on convex ridges between pits, and they make up about 10 percent of the unit.

Most areas of this map unit support little or no vegetation. Sparse stands of Virginia pine, loblolly pine, eastern redcedar, and broomsedge have become established through natural regeneration in some pits. Some undisturbed areas between Pits support hardwood timber.

Because of steep vertical walls and exposed, infertile soil material, this map unit is not suited to cropland or pasture. If managed, areas of this map unit are capable of supporting shrubs, grasses, and trees.

This unit is not assigned a capability class.

### Pr—Pruitton silt loam, occasionally flooded

#### Setting

*Landscape position:* Flood plains

*Slope range:* 0 to 2 percent

*Shape of areas:* Long and narrow

*Size of areas:* 10 to 50 acres

*Major uses:* Pasture, cropland

#### Typical Profile

*Surface layer:*

0 to 10 inches, brown, very friable silt loam

*Subsoil:*

10 to 15 inches, brown, friable silt loam

15 to 34 inches, dark yellowish brown, friable loam

*Substratum:*

34 to 60 inches, dark yellowish brown, friable gravelly loam

#### Inclusions

- Areas of the moderately well drained Lindell soils in narrow strips below steep side slopes
- Intermingled areas of Ennis soils
- Small areas of soils that have a sandy surface texture and are on natural levees adjacent to stream channels

#### Important Soil Properties and Features

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Available water capacity:* High

*Soil reaction:* Very strongly acid to moderately acid, except in areas where lime has been added

*Flood hazard:* Occasional for brief periods in winter and spring

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- Most climatically adapted crops can be grown, and good yields can be attained.
- Small grains can be damaged by the occasional flooding.

*Suitable management practices:*

- Planting crops later in the spring reduces the hazard of damage by flooding.
- Small grains should be planted in higher areas that are not subject to flooding.

*Capability class:* 1lw

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- Because of the flooding, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Black walnut, green ash, yellow-poplar, American sycamore, sweetgum, and cherrybark oak

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to all residential and commercial uses because of the hazard of flooding.

*Suitable management practices:*

- The hazard of flooding can be reduced by locating

dwelling, commercial structures, and roads and streets above the expected flood level.

## **Rb—Riverby gravelly sandy loam, frequently flooded**

### ***Setting***

*Landscape position:* Flood plains

*Slope range:* 0 to 2 percent

*Shape of areas:* Long and narrow

*Size of areas:* 10 to 300 acres

*Major uses:* Woodland, pasture

### ***Typical Profile***

*Surface layer:*

0 to 14 inches, dark yellowish brown, very friable gravelly sandy loam

*Substratum:*

14 to 23 inches, dark yellowish brown, loose, extremely gravelly coarse sandy loam

23 to 38 inches, dark yellowish brown, loose, very gravelly coarse sandy loam

38 to 49 inches, dark yellowish brown, loose, extremely gravelly loam

49 to 60 inches, brown, loose, extremely gravelly loam

### ***Inclusions***

- Small areas of the excessively drained Bruno soils and the well drained Ennis soils adjacent to stream channels

### ***Important Soil Properties and Features***

*Drainage class:* Excessively drained

*Permeability:* Rapid

*Available water capacity:* Very low or low

*Soil reaction:* Moderately acid to neutral

*Flood hazard:* Frequent for brief periods in winter and spring

*High water table:* Seasonal, at a depth of 4 to 5 feet in winter and spring

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to use as cropland because of the flooding, the low available water capacity, and the content of fragments in the surface layer and substratum.

*Capability class:* IVs

#### **Pasture and hayland**

*Suitability:* Sited

*General management considerations:*

- Hay yields may be reduced because of flooding or the limited amount of available water during dry periods.
- The frequent flooding for short periods can damage forage grasses and endanger livestock.
- The content of coarse fragments on the surface and in the subsoil can hinder the operation of farm equipment.

*Suitable management practices:*

- Because of the frequent flooding and the low available water during the the growing season, mixtures of grasses and legumes should be selected.
- Grazing livestock from summer through early fall and moving them to other areas from winter through spring minimizes the danger to livestock resulting from the flooding.
- The quality and quantity of forage can be maintained by rotating grazing when the forage plants have thinned out or when the forage plants are suffering from moisture stress.

**Woodland***Suitability:* Suited*Trees suitable for planting:* Yellow-poplar, American sycamore, and sweetgum*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- Planting hardier seedlings and bedding rows increase the seedling survival rate.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses***Suitability:* Unsited*General management considerations:*

- This soil is unsited to residential and commercial uses because of the frequent flooding.

**RfD—Rock outcrop-Barfield complex, 10 to 30 percent slopes*****Setting****Landscape position:* Hillsides*Shape of areas:* Oval and irregular*Size of areas:* 10 to 50 acres*Composition of the unit:* 75 percent Rock outcrop, 15 percent Barfield soil, and 10 percent included soils*Major use:* Woodland***Typical Profile*****Rock outcrop**

Rock outcrop consists of shelves of horizontally bedded limestone bedrock, large boulders, and stones.

**Barfield***Surface layer:*

0 to 5 inches, very dark brown, friable silty clay loam

*Subsoil:*

5 to 10 inches, dark brown, very firm clay

10 inches, hard limestone bedrock

***Inclusions***

- Small, intermingled areas of soils that are more than 20 inches deep over bedrock
- Small areas of soils that are less than 10 inches deep over bedrock

***Important Soil Properties and Features****Drainage class:* Well drained*Permeability:* Moderately slow*Available water capacity:* Very low*Soil reaction:* Neutral to mildly alkaline*Flood hazard:* None*High water table:* None*Depth to rock:* At a depth of 8 to 20 inches***Use and Management*****Cropland***Suitability:* Unsited*General management considerations:*

- This map unit is unsited to use as cropland because of the slope, the rock outcroppings, and the low available water capacity.

*Capability class:* VIIs**Pasture and hayland***Suitability:* Poorly suited

- This map unit is poorly suited to hayland and pasture because of the slope, the hazard of erosion, the low available water capacity, and the hard limestone bedrock at the surface.

**Woodland***Suitability:* Poorly suited*Trees suitable for planting:* Eastern redcedar, Virginia pine, white oak, chesnut oak, and shortleaf pine*General management considerations:*

- This map unit is poorly suited to pasture and hay because of the hazard of erosion, the equipment limitation, the seedling mortality rate, and plant competition.

- Most areas of this map unit are too small and difficult to manage for timber using conventional methods of harvesting, and costs will not likely be offset by economic returns.

### **Residential and commercial uses**

*Suitability:* Unsited

*General management considerations:*

- This map unit is unsited to residential and commercial uses because of the slope, the depth to rock, and the shrink-swell potential.

## **SaD—Saffell gravelly fine sandy loam, 12 to 20 percent slopes**

### ***Setting***

*Landscape position:* Hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 100 acres

*Major use:* Woodland

### ***Typical Profile***

*Surface layer:*

0 to 6 inches, brown, very friable gravelly fine sandy loam

*Subsurface layer:*

6 to 12 inches, brown, very friable gravelly fine sandy loam

*Subsoil:*

12 to 22 inches, strong brown, friable very gravelly sandy clay loam

22 to 36 inches, strong brown, friable very gravelly sandy loam

*Substratum:*

36 to 60 inches, strong brown, loose, extremely gravelly loamy sand

### ***Inclusions***

- Areas of Brandon soils on the upper part of shoulder slopes
- Small areas of Luverne soils on the upper part of shoulder slopes
- Small areas of Ennis soils in narrow drainageways

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the subsoil, moderately rapid in the substratum

*Available water capacity:* Low

*Soil reaction:* Very strongly acid to strongly acid

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to row crops because of the slope, the limited available water, and the content of fragments in the surface layer and subsoil.

*Capability class:* VIs

#### **Pasture and hayland**

*Suitability:* Poorly suited

*General management considerations:*

- The low amount of available water causes the soil to be droughty and reduces the yields.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- Forage plants that can tolerate droughty conditions should be selected.
- Stocking rates should be adjusted to prevent overgrazing and to help prevent erosion.

#### **Woodland**

*Suitability:* Suited to drought-tolerant species

*Trees suitable for planting:* White oak, chesnut oak,

Virginia pine, mockernut hickory, and eastern redcedar

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the restricted use of equipment, and plant competition.

*Suitable management practices:*

- Logging roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Harvesting and planting operations may require special planning or equipment because of the coarse fragments in the surface layer and subsoil.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- The slope is a major limitation for dwellings, small commercial buildings, and local roads and streets.
- The permeability in the subsoil and the slope are limitations for septic tank absorption fields.

*Suitable management practices:*

- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.

- Constructing roads and streets in the less sloping areas reduces the amount of cut and fill needed.
- Increasing the size of the septic tank absorption area and placing filter lines on the contour help to overcome the restricted permeability and the slope.

## **SaF—Saffell gravelly fine sandy loam, 20 to 60 percent slopes**

### ***Setting***

*Landscape position:* Steep hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 400 acres

*Major use:* Woodland

### ***Typical Profile***

*Surface layer:*

0 to 4 inches, brown, very friable gravelly sandy loam

*Subsurface layer:*

4 to 10 inches, yellowish brown, very friable gravelly sandy clay loam

*Subsoil:*

10 to 36 inches, brown, friable very gravelly sandy clay loam

*Substratum:*

36 to 60 inches, strong brown, loose, extremely gravelly loamy sand

### ***Inclusions***

- Small, intermingled areas of Biffle soils on hillsides
- Small areas of Ennis soils in narrow drainageways

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the subsoil, moderately rapid in the substratum

*Available water capacity:* Low

*Soil reaction:* Very strongly acid to strongly acid

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to row crops because of the slope, the limited available water, and the content of fragments in the surface layer and subsoil.

*Capability class:* VIIIs

#### **Pasture and hayland**

*Suitability:* Poorly suited

*General management considerations:*

- The low amount of available water causes the soil to be droughty and reduces the yields.
  - If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- Suitable management practices:*
- Forage plants that can tolerate droughty conditions should be selected.
  - Stocking rates should be adjusted, especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
  - Pasture in areas that have more than 30 percent slopes may be too steep for the safe operation of farm equipment unless access roads are built on the contour for broadcasting seed, fertilizer, and herbicide.

#### **Woodland**

*Suitability:* Suited to drought-tolerant species

*Trees suitable for planting:* White oak, chesnut oak, Virginia pine, mockernut hickory, and eastern redcedar

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the restricted use of equipment, and plant competition.
- Suitable management practices:*
- Logging roads, skid trails, yarding paths, and landings should be seeded to a permanent plant cover to reduce the hazard of erosion.
  - Harvesting and planting operations may require special planning or equipment because of the coarse fragments in the surface layer and subsoil.
  - Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to most residential and commercial uses because of the slope, the large amount of fragments in the soil, and the limited permeability in the subsoil.

## **SeB—Silerton silt loam, 2 to 5 percent slopes**

### ***Setting***

*Landscape position:* Broad, undulating upland ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 200 acres

*Major uses:* Cropland, pasture

### **Typical Profile**

*Surface layer:*

0 to 4 inches, dark brown, very friable silt loam

*Subsoil:*

4 to 22 inches, yellowish brown, friable silty clay loam

22 to 27 inches, yellowish brown, mottled, friable loam

27 to 32 inches, mottled yellowish brown, red, and brown, firm clay loam

32 to 60 inches, red, mottled, firm clay

### **Inclusions**

- A few small areas of moderately well drained soils that have a fragipan and are in saddles and on gentle flats
- A few areas of severely eroded soils that have a silty clay loam surface texture
- Small areas of Luverne soils on shoulder slopes
- Small, intermingled areas of Brandon soils

### **Important Soil Properties and Features**

*Drainage class:* Well drained

*Permeability:* Moderate in the upper part, slow in the lower part

*Available water capacity:* High

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- Most climatically adapted crops grow well if they are managed to control erosion.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion (fig. 10) and runoff.

*Capability class:* 11e

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- This soil has no significant limitations for forage production if erosion is controlled.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, mockernut hickory, and loblolly pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil is a major limitation for septic tank filter fields.
- The shrink-swell potential in the lower part of the subsoil is a limitation for dwellings with basements.
- Low strength is a limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the absorption field or mounding areas used for filter lines with a more suitable material helps to overcome the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

### **SeB2—Sileron silt loam, 2 to 5 percent slopes, eroded**

#### **Setting**

*Landscape position:* Broad, undulating upland ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 200 acres

*Major use:* Cropland

#### **Typical Profile**

*Surface layer:*

0 to 5 inches, yellowish brown, mottled, very friable silt loam

*Subsoil:*

5 to 22 inches, yellowish brown, friable silty clay loam



Figure 10.—An area of Silerton silt loam, 2 to 5 percent slopes. This soil is well suited to most crops if careful attention is paid to controlling erosion.

22 to 45 inches, yellowish red, mottled, firm clay loam  
45 to 60 inches, mottled red, strong brown, and yellowish brown, firm clay

#### ***Inclusions***

- A few small areas of moderately well drained soils that have a fragipan and are in saddles and on gentle flats
- A few areas of severely eroded soils that have a silty clay loam surface texture
- Small areas of Luverne soils on shoulder slopes
- Small, intermingled areas of Brandon soils

#### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the upper part, slow in the lower part

*Available water capacity:* High

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

#### ***Use and Management***

##### ***Cropland***

*Suitability:* Well suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping

reduces the hazard of water erosion and runoff.

*Capability class:* IIe

### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- This soil has no significant limitations for forage production if erosion is controlled.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, mockernut hickory, and loblolly pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil is a major limitation for septic tank filter fields.
- The shrink-swell potential in the lower part of the subsoil is a limitation for dwellings with basements.
- Low strength is a limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the absorption field or mounding areas used for filter lines with a more suitable material helps to overcome the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## **SeC—Sileron silt loam, 5 to 8 percent slopes**

### ***Setting***

*Landscape position:* Undulating upland ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 200 acres

*Major use:* Pasture

### ***Typical Profile***

*Surface layer:*

0 to 4 inches, dark brown, very friable silt loam

*Subsoil:*

4 to 22 inches, yellowish brown, friable silty clay loam

22 to 27 inches, yellowish brown, mottled, friable loam

27 to 32 inches, mottled yellowish brown, red, and brown, firm clay loam

32 to 60 inches, red, mottled, firm clay

### ***Inclusions***

- A few small areas of moderately well drained soils that have a fragipan and are in saddles
- A few areas of severely eroded soils that have a silty clay loam surface texture
- Small areas of Luverne soils on shoulder slopes
- Small, intermingled areas of Brandon soils

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the upper part, slow in the lower part

*Available water capacity:* High

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillage can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

**Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, mockernut hickory, and loblolly pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion and plant competition.

*Suitable management practices:*

- Limiting the use of equipment for harvesting and planting operations when the soil is wet and carefully designing access roads and skid trails reduce the hazard of erosion.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

**Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil is a major limitation for septic tank filter fields.
- The slope and the shrink-swell potential in the lower part of the subsoil are limitations for dwellings with basements.
- Low strength is a major limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the absorption field or mounding areas used for filter lines with a more suitable material helps to overcome the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

**SeC2—Silerton silt loam, 5 to 8 percent slopes, eroded*****Setting***

*Landscape position:* Undulating upland ridgetops

*Shape of areas:* Irregular

*Size of areas:* 10 to 200 acres

*Major use:* Pasture

***Typical Profile***

*Surface layer:*

0 to 5 inches, yellowish brown, mottled, very friable silt loam

*Subsoil:*

5 to 22 inches, yellowish brown, friable silty clay loam  
22 to 45 inches, yellowish red, mottled, firm clay loam  
45 to 60 inches, mottled red, strong brown, and yellowish brown, firm clay

***Inclusions***

- A few small areas of moderately well drained soils that have a fragipan and are in saddles
- A few areas of severely eroded soils that have a silty clay loam surface texture
- Small areas of Luverne soils on shoulder slopes
- Small, intermingled areas of Brandon soils

***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate in the upper part, slow in the lower part

*Available water capacity:* High

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* More than 5 feet

***Use and Management*****Cropland**

*Suitability:* Suited

*General management considerations:*

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.

*Suitable management practices:*

- Using practices such as no-till and contour stripcropping reduces the hazard of water erosion and runoff.
- Tillage can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; using minimum tillage; and growing cover crops.

*Capability class:* IIIe

### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Alfalfa grows well and produces good yields if provided with adequate amounts of lime and fertilizer and if other management needs are met.

### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, white oak, southern red oak, mockernut hickory, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion and plant competition.

*Suitable management practices:*

- Limiting the use of equipment for harvesting and planting operations when the soil is wet and carefully designing access roads and skid trails reduce the hazard of erosion.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Suited

*General management considerations:*

- The permeability in the subsoil is a major limitation for septic tank filter fields.
- The slope and the shrink-swell potential in the lower part of the subsoil are limitations for dwellings with basements.
- Low strength is a major limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the absorption field or mounding areas used for filter lines with a more suitable material helps to overcome the restricted permeability.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings help to prevent possible structural damage to dwellings.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## **SgC—Sugargrove channery silt loam, 5 to 12 percent slopes**

### ***Setting***

*Landscape position:* Benches on the lower part of hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 20 acres

*Major uses:* Woodland, pasture

### ***Typical Profile***

*Surface layer:*

0 to 3 inches, brown, very friable channery silt loam

*Subsurface layer:*

3 to 13 inches, light yellowish brown, very friable channery silt loam

*Subsoil:*

13 to 24 inches, strong brown, friable channery silty clay loam

24 to 31 inches, yellowish red, friable channery silty clay loam

*Substratum:*

31 to 46 inches, strong brown, firm very channery silty clay loam

46 to 60 inches, alternating strata of highly fractured siltstone and silty clay loam

### ***Inclusions***

- Areas of the somewhat excessively drained Biffle soils in higher positions on hillsides
- Areas of the somewhat excessively drained Sulphura soils on the lower part of hillsides
- Small areas of the well drained Minvale soils on slightly higher foot slopes

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Rippable siltstone at a depth of 40 to 60 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- The size and shape of the map unit, the slope, the

limited available water capacity during dry years, and the depth to rock are limitations for crop production.

- This soil is susceptible to water erosion, which can result in the removal of valuable topsoil and can adversely affect rooting depth.
- Coarse fragments on or near the surface of the soil can hinder tillage and reduce the amount of moisture available to plants during dry years.

*Suitable management practices:*

- Management practices, including no-till, contour farming, stripcropping, and growing cover crops, increase soil moisture and reduce the hazard of erosion.
- Tillth can be improved or maintained by using a cropping system that includes grasses, legumes, or grass-legume mixtures; rotating crops; and returning crop residue to the soil.

*Capability class:* IIIe

### Pasture and hayland

*Suitability:* Suited

*General management considerations:*

- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- The limited amount of available water reduces yields in most years.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Forage plants that can tolerate droughty conditions should be selected.
- Avoiding overgrazing, especially in the sloping areas, reduces the hazard of erosion.

### Woodland

*Suitability:* Suited

*Trees suitable for planting:* Eastern redcedar, white oak, mockernut hickory, chesnut oak, and Virginia pine

*General management considerations:*

- The main limitation for the management of timber is plant competition.

*Suitable management practices:*

- Competing vegetation can be reduced by using controlled burning, applying herbicide, and girdling or cutting unwanted trees.

### Residential and commercial uses

*Suitability:* Poorly suited

*General management considerations:*

- This map unit is poorly suited for most residential and

commercial uses because of the size and remote location of mapped areas.

- The depth to rock, the slope, and the slow permeability in the subsoil are limitations for septic tank absorption fields.
- The slopes cut for dwellings, small commercial buildings, and road beds are generally stable, but slumping and slippage can occur because the bedrock is highly fractured and the rock layers are parallel to the slope.

*Suitable management practices:*

- Onsite investigation is needed to determine whether the area considered for a septic tank absorption field is underlain by suitable material.
- Because the soil is subject to slumping, especially in the steeper areas, structures and roads should be constructed in the more gently sloping areas and a drainage system should be designed to minimize the hazard of slumping.

## SgD—Sugargrove channery silt loam, 12 to 20 percent slopes

### Setting

*Landscape position:* Moderately steep benches on hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 30 acres

*Major uses:* Woodland, pasture

### Typical Profile

*Surface layer:*

0 to 3 inches, brown, very friable channery silt loam

*Subsurface layer:*

3 to 13 inches, light yellowish brown, very friable channery silt loam

*Subsoil:*

13 to 24 inches, strong brown, friable channery silty clay loam

24 to 31 inches, yellowish red, friable channery silty clay loam

*Substratum:*

31 to 46 inches, strong brown, firm very channery silty clay loam

46 to 60 inches, alternating strata of highly fractured siltstone and silty clay loam

### Inclusions

- Areas of the somewhat excessively drained Biffle soils in higher positions on hillsides
- Areas of the somewhat excessively drained Sulphura soils on the lower part of hillsides

- Small areas of the well drained Minvale soils on slightly higher foot slopes

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Rippable siltstone at a depth of 40 to 60 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Poorly suited

*General management considerations:*

- This soil is poorly suited to use as cropland because of the slope, the size and shape of the map unit, the limited available water capacity during dry years, and the depth to rock.

*Capability class:* IVe

#### **Pasture and hayland**

*Suitability:* Suited

*General management considerations:*

- Pasture renovation is necessary when the better forage plants have decreased to a level less than that needed for optimum production.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.
- The limited amount of available water reduces yields in most years.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Forage plants that can tolerate droughty conditions should be selected.
- Avoiding overgrazing, especially in the sloping areas, reduces the hazard of erosion.

#### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Eastern redcedar, white oak, mockernut hickory, chesnut oak, and Virginia pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the restricted use of equipment, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a

permanent plant cover to reduce the hazard of erosion.

- Wheeled and tracked timber harvesting equipment can be used, but only during dry periods from midsummer through early fall.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- The depth to rock, the slope, and the slow permeability in the subsoil are limitations for septic tank absorption fields.
- The slopes cut for dwellings, small commercial buildings, and road beds are generally stable, but slumping and slippage can occur because the bedrock is highly fractured and the rock layers are parallel to the slope.

*Suitable management practices:*

- Onsite investigation is needed to determine whether the area considered for a septic tank absorption field is underlain by suitable material.
- Because the soil is subject to slumping, especially in the steeper areas, structures and roads should be constructed in the more gently sloping areas and a drainage system should be designed to minimize the hazard of slumping.

### **SuF—Sulphura channery silt loam, 20 to 60 percent slopes**

#### ***Setting***

*Landscape position:* Steep hillsides

*Shape of areas:* Irregular

*Size of areas:* 10 to 200 acres

*Major use:* Woodland

#### ***Typical Profile***

*Surface layer:*

0 to 5 inches, brown channery silt loam

*Subsoil:*

5 to 16 inches, yellowish brown very channery silt loam

16 to 23 inches, brown very channery silt loam

22 inches, hard siltstone

#### ***Inclusions***

- Small areas of similar soils that are less than 20 inches deep over hard bedrock
- Intermingled areas of the well drained Biffle soils on the upper parts of shoulder slopes on hillsides
- Small areas of the well drained Minvale soils on foot slopes

- Small areas of the well drained Ashwood soils in lower positions on steep hillsides

### ***Important Soil Properties and Features***

*Drainage class:* Somewhat excessively drained  
*Permeability:* Moderately rapid  
*Available water capacity:* Low  
*Soil reaction:* Strongly acid to moderately acid  
*Flood hazard:* None  
*High water table:* None  
*Depth to rock:* Variable; hard bedrock at a depth of 20 to 40 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited  
*General management considerations:*  
 • This soil is unsited to use as cropland because of the slope, the low available water capacity, the depth to rock, and the content of fragments in the surface layer and subsoil.  
*Capability class:* VIIIs

#### **Pasture and hayland**

*Suitability:* Poorly suited  
*General management considerations:*  
 • This soil is poorly suited for use as pasture or for hay because of the slope, the low available water, the content of coarse fragments in the surface layer and subsoil, and the depth to rock.

#### **Woodland**

*Suitability:* Suited to drought-resistant species  
*Trees suitable for planting:* Eastern redcedar, white oak, mockernut hickory, chesnut oak, and Virginia pine  
*General management considerations:*  
 • The main limitations for the management of timber are the hazard of erosion, the seedling mortality rate, the restricted use of equipment, and plant competition.  
*Suitable management practices:*  
 • Steep yarding paths, skid trails, fire breaks, and landings are subject to rilling and gullyng unless they are provided with adequate water bars, are protected by plant cover, or both.  
 • Selecting drought-resistant species and planting seedlings on north- and east-facing slopes increase the seedling survival rate and help to retain soil moisture.  
 • Wheeled and tracked equipment can be used in the moderately steep areas, but more specialized harvesting methods may be required in the steeper areas.  
 • Careful planning is needed for skid trails and access roads during harvesting and planting operations because

of the slope, the content of fragments in the surface layer and subsoil, and the depth to rock.

- Competing vegetation can be reduced by using controlled burning, applying herbicide, and girdling or cutting unwanted trees.

#### **Residential and commercial uses**

*Suitability:* Poorly suited  
*General management considerations:*  
 • This soil is poorly suited for most uses because of the slope, the depth to rock, and a hazard of seepage and slumping.

### **SxF—Sulphura-Rock outcrop complex, 30 to 75 percent slopes**

#### ***Setting***

*Landscape position:* Steep hillsides  
*Slope range:* 30 to 75 percent  
*Shape of areas:* Irregular  
*Size of areas:* 10 to 200 acres  
*Composition of the unit:* 60 percent Sulphura soil, 20 percent Rock outcrop, and 20 percent included soils  
*Major use:* Woodland

#### ***Typical Profile***

##### **Sulphura**

*Surface layer:*  
 0 to 5 inches, brown channery silt loam

*Subsoil:*  
 5 to 16 inches, yellowish brown very channery silt loam  
 16 to 23 inches, brown very channery silt loam  
 22 inches, hard siltstone

##### **Rock outcrop**

Rock outcrop consists of level-bedded siltstone, limestone, and shale that protrudes 1 to 5 feet above ground. It ranges from several feet in size in some places to large shelves of rock that are in a stairstep pattern and are hundreds of feet in length. Also included are steep cliffs of limestone that have a laminar cap of hard siltstone.

#### ***Inclusions***

- Small areas of similar soils that are less than 20 inches deep over hard bedrock
- Intermingled areas of the well drained Biffle soils on the upper shoulders of side slopes and the well drained Minvale soils on foot slopes
- Small areas of Ashwood soils on the lower part of hillsides

### ***Important Soil Properties and Features***

#### **Sulphura**

*Drainage class:* Somewhat excessively drained  
*Permeability:* Moderately rapid  
*Available water capacity:* Low or very low  
*Soil reaction:* Strongly acid to moderately acid  
*Flood hazard:* None  
*High water table:* None  
*Depth to rock:* Variable; at a depth of 20 to 40 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited  
*General management considerations:*  
 • This unit is unsited to crops because of the rock outcroppings, the limited available water capacity, the depth to rock, the slope, and the content of fragments in the surface layer and subsoil.  
*Capability class:* VIIs

#### **Pasture and hayland**

*Suitability:* Unsited  
*General management considerations:*  
 • This map unit is unsited to pasture and hay because of the slope, the low available water capacity, the content of coarse fragments in the surface layer and subsoil, and the depth to rock.

#### **Woodland**

*Suitability:* Suited to drought-resistant species  
*Trees suitable for planting:* Eastern redcedar and Virginia pine  
*General management considerations:*  
 • The main limitations for the management of timber are the hazard of erosion, the seedling mortality rate, the restricted use of equipment, and plant competition.  
 • Most areas of this map unit are too small and difficult to manage for timber using conventional methods of harvesting, and costs will not likely be offset by economic returns.  
*Suitable management practices:*  
 • Steep yarding paths, skid trails, fire breaks, and landings are subject to rilling and gullying unless they are provided with adequate water bars, are protected by plant cover, or both.  
 • Selecting drought-resistant species and planting seedlings on north- and east-facing slopes increase the seedling survival rate and help to retain soil moisture.  
 • High-lead or other cable logging methods are suitable to use in areas of this unit.  
 • Careful planning is needed for skid trails and access roads during harvesting and planting operations because

of the slope, the content of fragments in the surface layer and subsoil, the rock outcroppings, and the depth to rock.

• Because of the slope and the difficulty in accessing sites, the natural reforestation of harvested areas by hardwood sprouts and seedlings is recommended.

#### **Residential and commercial uses**

*Suitability:* Unsited  
*General management considerations:*  
 • This unit is unsited to residential and commercial uses because of the slope, the rock outcroppings, the depth to rock, and a hazard of seepage and slumping.

### **Ta—Taft silt loam**

#### ***Setting***

*Landscape position:* Upland flats and depressions  
*Slope range:* 0 to 2 percent  
*Shape of areas:* Irregular  
*Size of areas:* 10 to 30 acres  
*Major uses:* Woodland, pasture

#### ***Typical Profile***

*Surface layer:*  
 0 to 2 inches, dark grayish brown, very friable silt loam  
*Subsurface layer:*  
 2 to 8 inches, pale brown, mottled, very friable silt loam  
*Subsoil:*  
 8 to 18 inches, light olive brown, mottled, friable silt loam  
 18 to 21 inches, light brownish gray, very friable silt loam and yellowish brown, mottled, friable silty clay loam  
 21 to 38 inches, fragipan that is light olive brown, mottled, firm silt loam  
 38 to 57 inches, fragipan that is gray, yellowish brown, light olive brown, firm silty clay loam  
 57 to 60 inches, yellowish red, firm silty clay loam

#### ***Inclusions***

• Small areas of the moderately well drained Dickson soils on slightly higher knolls along the edge of depressions  
 • Small, narrow areas of soils that are along drainageways and are occasionally flooded  
 • Small areas of the poorly drained Guthrie soils in lower positions in depressions and in small depressions on nearly level flats

### ***Important Soil Properties and Features***

*Drainage class:* Somewhat poorly drained  
*Permeability:* Moderate above the fragipan, slow in the fragipan

*Available water capacity:* Moderate

*Soil reaction:* Very strongly acid or strongly acid, except in areas where lime has been added

*Flood hazard:* None

*High water table:* Perched at a depth of 1 to 1.5 feet in winter and spring

*Depth to rock:* More than 5 feet

### ***Use and Management***

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- The seasonal wetness limits the production and harvest of some crops.
- The perched water table in winter and early in spring can restrict rooting depth and inhibit plant germination.

*Suitable management practices:*

- Planting short-season annuals, such as soybeans or grain sorghum, is recommended because of the seasonal wetness early in spring.
- Planting crops later in the spring improves plant germination and early growth.

*Capability class:* IIIw

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- A perched water table limits grazing for several days at a time during the winter and early spring.

*Suitable management practices:*

- Grazing should be deferred until a period from late spring to early fall.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Swamp white oak, cherrybark oak, sweetgum, yellow-poplar, American sycamore, green ash, and pin oak

*General management considerations:*

- The main limitations for the management of timber are the restricted use of equipment, the seedling mortality rate, and plant competition.

*Suitable management practices:*

- Harvesting and planting during dry periods in summer and early fall and using low-pressure ground equipment cause less damage to the soil and help to maintain productivity.

- Planting hardier seedlings increases the seedling survival rate.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- A seasonally perched water table and restricted permeability in the subsoil are major limitations for septic tank absorption fields.
- Low strength is a major limitation for local roads and streets.
- The seasonal wetness is a limitation for dwellings with basements and small commercial buildings.

*Suitable management practices:*

- Using subsurface drains or open ditches lowers the water table around areas to be used for septic tank filter fields.
- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.
- Wetness can be reduced by providing drainage around dwellings and small commercial buildings.

### **TbC—Talbot silt loam, 5 to 15 percent slopes, rocky**

#### ***Setting***

*Landscape position:* Rolling ridgetops and side slopes

*Shape and composition of mapped areas:* Irregular; rock outcrop makes up about 0.1 to 10 percent of mapped areas

*Size of areas:* 10 to 80 acres

*Major use:* Woodland, pasture

#### ***Typical Profile***

*Surface layer:*

0 to 4 inches, brown, very friable silt loam

*Subsurface layer:*

4 to 8 inches, strong brown, friable silty clay loam

*Subsoil:*

8 to 34 inches, reddish brown, very firm clay

34 to 38 inches, mottled yellowish brown, brownish yellow; light brownish gray, very firm clay

38 inches, hard gray limestone

#### ***Inclusions***

- Small areas of soils that have bedrock at a depth of 40 to 60 inches



Figure 11.—An area of Talbott silt loam, 5 to 15 percent slopes, rocky. The exposed bedrock and the stones on the surface limit the stocking rate for pasture.

- Small areas of the shallow Barfield soils along the edges of the unit
- Small, intermingled areas of soils that have numerous rock outcrops

#### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid to neutral

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Variable; hard bedrock at a depth of 20 to 40 inches

#### ***Use and Management***

##### **Cropland**

*Suitability:* Unsited

- This soil is unsited to use as cropland because of the rock outcrops, the slope, the high hazard of erosion, the size and shape of the unit, and the content of stones and cobbles on the surface.

*Capability class:* V1e

##### **Pasture and hayland**

*Suitability:* Poorly suited

*General management considerations:*

- Large rock outcrops and numerous stones and cobbles

hinder the use of equipment for pasture or hay operations.

- Hay yields may be reduced during dry years because of the limited amount of available water.
- If the plants are overgrazed or if plant stands are poor, the slope increases the hazard of erosion.

*Suitable management practices:*

- Forage plants that can tolerate droughty conditions should be selected.
- Stocking rates should be adjusted (fig. 11), especially on the steeper slopes, to prevent overgrazing and to help prevent erosion.
- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.

### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the equipment limitation and plant competition.

*Suitable management practices:*

- Large rock outcrops and numerous stones and cobbles can hinder the use of mechanical planters in areas of this unit, and the use of an alternative planting method is recommended.
- Careful planning is needed for skid trails, roads, and log landings during harvesting operations.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- The permeability of the subsoil, the slope, and the rock outcrop are limitations for septic tank absorption fields.
- The rock outcrop, the slope, the shrink-swell potential, and the depth to rock are limitations for dwellings and small commercial buildings.
- Low strength is a major limitation for local roads and streets.

*Suitable management practices:*

- Increasing the size of the septic tank absorption area and placing filter lines on the contour in areas that have few rock outcrops help to overcome the restricted permeability and the slope.
- Proper building designs and construction costs are the major considerations on sites that need to be excavated or filled to construct dwellings or small commercial buildings.
- Backfilling deep cuts with material that has a low shrink-swell potential and diverting runoff away from buildings

help to prevent possible structural damage to dwellings.

- If the soil is to be used as a base for roads and streets, mixing the upper part of the soil with coarser textured material will increase the soil's strength and stability.

## **TbE—Talbot silt loam, 15 to 35 percent slopes, rocky**

### ***Setting***

*Landscape position:* Hillsides

*Shape and composition of mapped areas:* Irregular; rock outcrop makes up 0.1 to 10 percent of mapped areas

*Size of areas:* 30 to 200 acres

*Major use:* Woodland

### ***Typical Profile***

*Surface layer:*

0 to 4 inches, brown, very friable gravelly silt loam

*Subsurface layer:*

4 to 8 inches, strong brown, friable gravelly silty clay loam

*Subsoil:*

8 to 34 inches, reddish brown, very firm clay

34 to 38 inches, mottled yellowish brown, brownish yellow, light brownish gray, very firm clay

38 inches, hard gray limestone

### ***Inclusions***

- Small areas of soils that have bedrock at a depth of 40 to 60 inches
- Small areas of the shallow Barfield soils along the edges of the unit
- Small, intermingled areas that have numerous rock outcrops

### ***Important Soil Properties and Features***

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Soil reaction:* Strongly acid to neutral

*Flood hazard:* None

*High water table:* None

*Depth to rock:* Variable; hard bedrock at a depth of 20 to 40 inches

### ***Use and Management***

#### **Cropland**

*Suitability:* Unsited

- This soil is unsited to use as cropland because of the rock outcrops, the slope, the high hazard of erosion, the size and shape of the unit, and the content of stones and cobbles on the surface.

*Capability class:* VIle

### **Pasture and hayland**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited to pasture or hay because of rock outcrops, the slope, the limited available water capacity during dry seasons, and numerous stones and cobbles.

### **Woodland**

*Suitability:* Suited

*Trees suitable for planting:* Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, and shortleaf pine

*General management considerations:*

- The main limitations for the management of timber are the hazard of erosion, the equipment limitation, and plant competition.

*Suitable management practices:*

- Access roads and skid trails should be seeded to a permanent plant cover to reduce the hazard of erosion.
- Large rock outcrops and numerous stones and cobbles can hinder the use of mechanical planters in areas of this unit, and the use of an alternative planting method is recommended.
- Careful planning is needed for skid trails, roads, and log landings during harvesting operations.
- Site preparation, such as burning, applying herbicide, and girdling or cutting unwanted trees, reduces the immediate plant competition.

### **Residential and commercial uses**

*Suitability:* Unsited

*General management considerations:*

- This soil is unsited for residential and commercial uses because of the slope, the permeability of the subsoil, the shrink-swell potential, and the rock outcrop.

## **WfA—Wolftever silt loam, 0 to 2 percent slopes, occasionally flooded**

### **Setting**

*Landscape position:* Low stream terraces

*Shape of areas:* Irregular and narrow

*Size of areas:* 5 to 25 acres

*Major uses:* Hayland, pasture

### **Typical Profile**

*Surface layer:*

0 to 6 inches, dark yellowish brown, very friable silt loam

*Subsoil:*

6 to 16 inches, dark yellowish brown, friable silty clay loam

16 to 26 inches, yellowish brown, firm silty clay

26 to 36 inches, yellowish brown, mottled, firm silty clay

36 to 52 inches, yellowish brown, mottled, friable silty clay loam

52 to 60 inches, yellowish brown, mottled, friable silty clay loam

### **Inclusions**

- Small areas of somewhat poorly drained soils in slight depressions or swales
- Small, narrow strips of well drained, loamy soils on natural levees of the Tennessee River

### **Important Soil Properties and Features**

*Drainage class:* Moderately well drained

*Permeability:* Moderately slow

*Available water capacity:* High

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* Occasional for very brief periods, generally in winter and early in spring

*High water table:* Seasonal, at a depth of 2.5 to 3.5 feet in winter and early in spring

*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Suited

*General management considerations:*

- Small grains can be damaged by the occasional flooding in winter and early spring.
- Tillage in spring and harvest in fall can be delayed because of the seasonal wetness.

*Suitable management practices:*

- Small grains should be grown in higher areas that are not subject to flooding.
- Most short-season annuals, such as soybeans or grain sorghum, grow well and can be harvested early in fall.

*Capability class:* IIw

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness and flooding, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected (fig. 12).
- The seasonal wetness limits grazing for several days at a time during the winter and early spring.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.



Figure 12.—An area of Wolftever silt loam, occasionally flooded. This soil is well suited to growing tall fescue and ladino clover for pasture or hay.

- Grazing should be deferred until a period from late spring to early fall.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, sweetgum, swamp white oak, cherrybark oak, American sycamore, and green ash

*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- The seedling survival rate can be increased by

planting larger seedlings, bedding rows, and establishing a drainage system to help to reduce the seasonal wetness and divert flood water away from plant stands.

- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- Flooding is the major limitation for all residential and commercial uses.

*Suitable management practices:*

- The hazard of flooding can be reduced by locating dwellings, commercial structures, and roads and streets above the expected flood level.

## **WfB—Wolftever silt loam, 2 to 5 percent slopes, rarely flooded**

### **Setting**

*Landscape position:* Undulating stream terraces

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

*Major uses:* Cropland, pasture

### **Typical Profile**

*Surface layer:*

0 to 6 inches, dark yellowish brown, very friable silt loam

*Subsoil:*

6 to 16 inches, dark yellowish brown, friable silty clay loam

16 to 26 inches, yellowish brown, firm silty clay

26 to 36 inches, yellowish brown, mottled, firm silty clay

36 to 52 inches, yellowish brown, mottled, friable silty clay loam

52 to 60 inches, yellowish brown, mottled, friable silty clay loam

### **Inclusions**

- Small areas of somewhat poorly drained soils in slight depressions or swales
- Small, narrow strips of well drained, loamy soils on natural levees of the Tennessee River

### **Important Soil Properties and Features**

*Drainage class:* Moderately well drained

*Permeability:* Moderately slow

*Available water capacity:* High

*Soil reaction:* Strongly acid or very strongly acid, except in areas where lime has been added

*Flood hazard:* Rare for very brief periods, generally in winter and early in spring

*High water table:* Seasonal, at a depth of 2.5 to 3.5 feet in winter and early in spring

*Depth to rock:* More than 5 feet

### **Use and Management**

#### **Cropland**

*Suitability:* Well suited

*General management considerations:*

- Small grains can be damaged by flooding in winter and early spring in some years.

- Tillage in spring and harvest in fall can be delayed because of the seasonal wetness.

*Suitable management practices:*

- Small grains should be grown in higher areas that are not subject to seasonal wetness or flooding.
- Flooding occurs infrequently in areas of this soil, and the management of locally adapted crops is not affected during most years.
- Crops should be harvested during late summer and early fall, when seasonal wetness is not a limitation.

*Capability class:* llw

#### **Pasture and hayland**

*Suitability:* Well suited

*General management considerations:*

- Because of the seasonal wetness and flooding, only those hay and pasture plants that can tolerate short periods of wetness, such as fescue and white clover, should be selected.
- The seasonal wetness limits grazing for several days at a time during the winter and early spring.

*Suitable management practices:*

- The quality and quantity of forage can be maintained by rotating grazing, controlling weeds, and applying fertilizer annually.
- Grazing should be deferred until a period from late spring to early fall.

#### **Woodland**

*Suitability:* Well suited

*Trees suitable for planting:* Yellow-poplar, black walnut, sweetgum, swamp white oak, cherrybark oak, American sycamore, and green ash

*General management considerations:*

- The main limitations for the management of timber are the seedling mortality rate and plant competition.

*Suitable management practices:*

- The seedling survival rate can be increased by planting larger seedlings, bedding rows, and establishing a drainage system to reduce the seasonal wetness and divert flood water away from plant stands.
- Site preparation, such as chopping, burning, and applying herbicide, reduces the immediate plant competition.

#### **Residential and commercial uses**

*Suitability:* Poorly suited

*General management considerations:*

- Flooding is a major limitation for all residential and commercial uses.

*Suitable management practices:*

- The hazard of flooding can be reduced by locating dwellings, commercial structures, and roads and streets above the expected flood level.



## Prime Farmland

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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 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 59,480 acres, or nearly 13 percent of the survey area, meets the requirements for prime farmland.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. 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."

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

- AmA Armour silt loam, 0 to 2 percent slopes, occasionally flooded
- AmB Armour silt loam, gravelly substratum, 2 to 5 percent slopes
- BnB Brandon silt loam, 2 to 5 percent slopes
- BrB Braxton silt loam, 2 to 5 percent slopes
- DkB Dickson silt loam, 2 to 5 percent slopes
- Eg Egam silty clay loam, occasionally flooded
- En Ennis gravelly silt loam, occasionally flooded
- HuB Humphreys gravelly silt loam, 2 to 5 percent slopes
- LaB Lax silt loam, 2 to 5 percent slopes
- Ln Lindell silt loam, occasionally flooded
- Lo Lobelville gravelly silt loam, occasionally flooded
- LuB Luverne fine sandy loam, 2 to 5 percent slopes
- MoB Mountview silt loam, 2 to 5 percent slopes
- MoB2 Mountview silt loam, 2 to 5 percent slopes, eroded
- PkB Pickwick silt loam, 2 to 5 percent slopes
- SeB Silerton silt loam, 2 to 5 percent slopes
- SeB2 Silerton silt loam, 2 to 5 percent slopes, eroded
- WfA Wolftever silt loam, 0 to 2 percent slopes, occasionally flooded
- WfB Wolftever silt loam, 2 to 5 percent slopes, rarely flooded



## Use and Management of the Soils

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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 (fig. 13); 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 locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

### 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.

According to the Tennessee Agricultural Statistics Report, about 1,700 acres of soybeans (fig. 14), 1,000 acres of wheat, and 3,500 acres of corn were harvested in Wayne County in 1993. Additionally, about 16,700 acres were used for hay crops. Small acreages of other crops, including strawberries, snap beans, watermelons, peppers, and sweet corn, were reported.

In general, soil erosion is not a serious problem in Wayne County because the county contains only a relatively small acreage of cropland. It is, however, a significant problem in parts of Wayne County, where large areas are used for cultivated crops. The soils on uplands in the southwestern part of the county are susceptible to erosion, especially if they are intensively used for crops. These soils are susceptible to erosion because the surface layer has a high content of silt and a low content of clay. All of the soils in Wayne County that are in undulating or rolling areas are susceptible to erosion if the surface is exposed and is not adequately protected by a vegetative cover.

The loss of the original surface layer by erosion is damaging for several reasons. Productivity is reduced, plant nutrients are lost, and stream channels and drainage ditches can become blocked by sediment. Maintaining good productivity is dependent on retaining topsoil and reducing its loss by erosion. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. On soils that have undergone some degree of erosion, tilling or preparing a good seedbed is difficult, and crops are more easily stressed by a lack of moisture during dry periods than in uneroded areas. As the valuable topsoil is removed by erosion, layers that are undesirable for root growth become closer to the surface or, in some areas, become the surface layer. Soils such as Dickson, Lax, and Taft soils have a fragipan in the subsoil that limits the rooting depth and available water. The productivity of these soils is dependent upon retaining their surface layers.

Soil tillage is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils that



**Figure 13.—An area of Brandon silt loam, 5 to 12 percent slopes. Hay crops help to control erosion and provide income for the landowner.**

have good tilth are granular, porous, and easy to work. Most of the soils in the county have a surface layer of silt loam or gravelly silt loam that has a low content of organic matter. Intense rainfall can cause the surface of these silty soils to form a crust. The crust is hard when dry. It is somewhat impervious to the movement of water, which reduces the infiltration rate and increases the runoff rate. Regular additions of organic matter in the form of crop residue, manure, or other types of organic mulch improve soil structure, increase moisture, and reduce crusting. The gravelly surface layer of some soils, such as Humphreys, Ironcity, and Sugargrove soils, hinders tillage operations and interferes with seedbed preparation.

Nutrients are lost from the soil as a result of erosion and plant utilization. They must be replaced by frequent applications of fertilizer. Additions of fertilizer and lime should be based on the results of soil tests and on the nutrient requirements of the crop. Information about soil

tests and fertilizer recommendations can be obtained from the local office of the Agricultural Extension Service.

Stream channels can become filled with sediment as a result of erosion on adjacent uplands. Blocked or clogged stream channels can interfere with the natural drainage, increase the potential for flooding, and result in ponding in low areas that are not generally wet. The sedimentation can be minimized by using erosion-control practices and providing buffer strips between cultivated areas and stream banks.

Erosion-control practices provide a protective surface cover, reduce the runoff rate, and increase the infiltration of water. Using conservation tillage and including high-residue crops in the cropping system help to maintain a vegetative cover on the soil for extended periods and reduce the hazard of erosion. These practices can be adapted to most of the cropland in the county, except in steep or severely eroded areas. In sloping

areas, no-till or minimum tillage systems effectively control erosion.

The pasture and hayland in Wayne County consists mostly of cool-season grasses and legumes. The main grasses are tall fescue and orchardgrass. A few areas have introduced improved bermudagrass. The most common legumes are white clover, red clover, alfalfa, annual lespedeza, and sericea lespedeza. A mixture of legumes and grasses provides nitrogen and also provides a vegetative cover in bare or rocky areas. On livestock farms, which require pasture and hay, legume and grass forage crops in the cropping system reduce erosion in sloping areas, provide nitrogen, and maintain tilth. The management practices necessary for pasture include additions of fertilizer and lime, weed control, rotation

grazing, and occasional pasture renovation. Fertilizer should be applied based on the results of a soil test. Weeds can be controlled in pasture by using herbicides and mowing before the weeds reach maturity and produce seeds.

Most hay is cut from the surplus growth of pasture grasses and legumes. Annual lespedeza, sericea lespedeza, alfalfa, soybeans, millet, and small grains are also used as hay. The management of grasses and legumes for hay production requires more frequent additions of fertilizer. Hay crops should be cut at the stage of growth that provides the best quality feed and does not damage the grass-legume stand. Cutting perennial hay crops too close causes premature thinning or loss of the stand.



Figure 14.—An area of Pruitton silt loam, occasionally flooded. This soil is well suited to soybeans and other commonly grown crops.

### 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. 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*, or *s*, 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); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

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* or *s* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, 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

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

Woodland makes up about 372,000 acres, or 78 percent, of the total area of Wayne County. Nearly all of this woodland is privately owned. Of the total acreage that is privately owned, about 136,000 acres are held by industry.

Oak-hickory is the most common forest type, making up about 328,600 acres in Wayne County. It is usually found on upland soils. The loblolly-shortleaf pine forest type makes up about 31,000 acres. It is throughout the county, and it is often planted in eroded areas or in large industrial tracts. The oak-pine forest type makes up 6,200 acres, and it generally is on dry ridges and steep, south- and west-facing slopes. The elm-ash-cottonwood forest type makes up the remaining 6,200 acres of woodland. It is commonly in bottomland areas and along streams and rivers, where the soils are too wet for cultivation.

Wayne County is in an area of Tennessee where the average woodland growth is 40 cubic feet per acre per year. The potential average growth for this area is 65 cubic feet per acre per year. The bottomlands in Wayne County are capable of producing more than 150 cubic feet per acre per year. In the uplands, the highest potential for growth is normally on the lower third of the north- and east-facing slopes, where growth may reach 120 cubic feet per acre per year. Other values of woodland include wildlife habitat, recreation, aesthetics, and watershed protection.

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 (fig. 15), 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.

*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*, 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.

*Trees to plant* are those that are suitable for commercial wood production.



Figure 15.—The seedling mortality rate is a management concern in areas of Ashwood soils because roots are restricted to a zone above the limestone bedrock.

## Recreation

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

Wayne County has a moderate potential for recreational development. The activities with the highest potential for development include fishing, big and small game hunting, camping in campgrounds or vacation cabins, and using natural and scenic trails, rivers, and study areas along the Buffalo River and its major tributaries. Historic areas, hunting preserves (including waterfowl areas), boating and canoeing activities, winter fishing, picnic areas, and field sports areas have medium potential for further recreational development.

The soils in 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

Michael E. Zeman, state biologist, Natural Resources Conservation Service, helped prepare this section.

Wildlife is an important natural resource in Wayne County. It provides a source of revenue from hunting and fishing and also provides aesthetic appeal for recreational activities, such as camping, boating, hiking, photography, and bird watching. Popular game species include whitetail deer, eastern wild turkey, bobwhite quail, mourning dove, cottontail rabbit, gray squirrel, and fox squirrel.

The whitetail deer is the most popular game animal in the county. Deer populations are moderate to high, and substantial herd growth has occurred over the past few years. Harvest records indicate that approximately a fifteen-fold increase in the deer population occurred from 1970 to 1990. The Tennessee Wildlife Resources Agency estimates that parts of the western half of the county have as many as 30 deer per square mile.

Although they were almost eradicated before the 1950's, flocks of eastern wild turkey have been restored

by the Tennessee Wildlife Resources Agency in the county. Significant populations have only recently been established, and an approximately eight-fold increase in harvest numbers occurred between 1980 and 1991.

The populations of bobwhite quail are moderate in the county. The largest numbers of quail are in the southern and eastern areas and are associated with more interspersed habitats. In these areas, a good habitat diversity is found where brushy fence rows, clearcut areas, and idle grassland fields are adjacent to cropland fields and woodland edges.

Mourning doves migrate into the county each fall and winter. A healthy population of residual birds inhabits the county and remains throughout the year. The largest population of mourning doves is adjacent to harvested cropland and in idle fields. Wayne County offers an ideal habitat for these migrating birds. It has abundant roosting areas in large pine plantations that are close to water and cropland.

The cottontail rabbit population is good as a result of the abundant desirable habitat throughout the county. The largest population is generally associated with low, brushy or weedy cover near agricultural fields. Another species of rabbit, the swamp rabbit, is also in the county. The swamp rabbit is much larger than the cottontail rabbit, and it prefers lowland swamps and wooded flood plains. It is found on the flood plains of the Tennessee River, Buffalo River, and most of the major tributaries of these rivers. The swamp rabbit is listed as a "species of concern" by the state of Tennessee due to declining habitat caused by drainage activities and land clearing.

Three species of squirrels are in Wayne County. They are the southern flying squirrel, the fox squirrel, and the gray squirrel. The gray squirrel is the most common species, and it has excellent populations throughout the hardwood and mixed pine-hardwood forests. Fox squirrels are more common in upland pine plantations, in smaller woodlots, and in woody fence rows near agricultural fields. The southern flying squirrel is less abundant than the other species, and it generally inhabits hardwood stands along stream channels.

Wayne County offers a habitat for migratory waterfowl. The Tennessee River in the northwestern section of the county attracts moderate numbers of migrating birds annually. Some common species of waterfowl migrating across the county include the mallard, blue-wing teal, widgeon, bufflehead, Canadian geese, and snow geese. The most prominent species of duck that resides and nests in the county is the wood duck, which primarily uses the flood plain along the Tennessee River. Also, farm ponds and larger flood-prevention reservoirs in the county provide desirable roosting and resting habitat for waterfowl.

Several species of furbearers are in the county. Wetland furbearers, such as mink, muskrat, and beaver, have a moderate to high population along streams, small lakes, farm ponds, and river bottoms. Upland furbearers are abundant throughout the county. The main species include bobcat, opossum, raccoon, gray fox, striped skunk, and coyote.

Different species of songbirds are associated with different plant communities. Woodland birds, such as the Carolina chickadee, tufted titmouse, pileated woodpecker, and wood thrush thrive in the mixed pine and hardwood forests. Open land birds, including robins, meadowlarks, and various sparrows, are found near homesites and in nonforested areas. The birds of prey that commonly inhabit the county include the red-tailed hawk, sparrow hawk, barred owl, and screech owl.

The county has many ponds and small lakes available for fishing and recreation. Many of the ponds are stocked with largemouth bass, bluegill sunfish, and channel catfish. The water in these ponds is typically acidic and stained. The reproduction and quantity of fish can be restricted if the water quality is not managed.

Wayne County has a few wetlands, excluding such artificial wetlands as upland farm ponds. The wetlands are primarily wooded flood plains along the major rivers and streams. Areas of bottom land provide some of the most productive wildlife habitat in the county. These areas improve the water quality of streams by removing nutrients and trapping sediment from upland runoff. Also, they lower water temperatures by shading streams and provide leaf litter that serves as food for aquatic insects. The wooded bottoms also help to abate flooding.

Conservation practices can improve or maintain quality wildlife habitat. Rotating crops annually and leaving crop residue on the surface can provide food and winter cover for many species of wildlife. Fencing livestock and deferring grazing on some pastures protect food plots and nesting cover. These practices even protect fish habitat by reducing animal waste and preventing sediment from being washed into streams. Field borders and filter strips along streams protect the water quality and provide food, cover, and travel routes for many species of wildlife. Thinning the woodland should be performed selectively, in a manner that protects dens and mast-producing trees. Other practices that improve wildlife habitat include incorporating management systems, such as wildlife upland habitat management, wildlife wetland habitat management, fish pond management, pasture and hayland management, livestock exclusion, and woodland improvement, into land use planning.

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, orchardgrass, 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, switchgrass, and indiagrass.

*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 pyracantha, 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, cedar, and juniper.

*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, rushes, sedges, and reeds.

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

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

*Habitat for openland wildlife* consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

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

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

## Engineering

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

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, 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, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

*Dwellings and small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, 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 or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

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

### Sanitary Facilities

Table 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 or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

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

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

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 or to a cemented pan, flooding, large stones, and content of organic matter.

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

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

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

The ratings in the table are based on soil properties,

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

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

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

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as 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

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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.

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 (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of 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 oven-dry 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 are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

## Physical and Chemical Properties

Table 14 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area.

The estimates are based on field observations and on test data for these and similar soils.

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

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 (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at  $\frac{1}{3}$ -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.

*Soil reaction* is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other

plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Shrink-swell potential* is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

*Erosion factor K* indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur 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.

## Soil and Water Features

Table 15 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are based on estimates of runoff

potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

*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.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *extremely brief* if 0.1 to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

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.

*High water table* (seasonal) is the highest level of 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 depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

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

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

*Depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

A *cemented pan* is a cemented or indurated subsurface layer within a depth of 5 feet. Such a pan causes difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

*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.

# Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (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 16 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-loamy, 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" (9). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (7) and in "Keys to Soil Taxonomy" (8). 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 on stream terraces throughout the county. The soils formed in old alluvium. Slopes range from 0 to 5 percent.

Typical pedon of Armour silt loam, occasionally flooded, about 2.7 miles southwest of Flatwoods, 1.6 miles southeast of the intersection of Tennessee Highways 48 and 13, about 0.6 mile west of the intersection of Tennessee Highway 13 and Carlow Road, in a cultivated field (atlas sheet 2, lat. 35 degrees 27 minutes 36 seconds N. and long. 87 degrees 47 minutes 04 seconds W.).

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; weak medium granular structure; very friable; many very fine roots; many fine tubular pores; slightly acid; clear smooth boundary.  
BA—10 to 15 inches; dark yellowish brown (10YR 4/4) silt

loam; weak medium subangular blocky structure; friable; common very fine roots; many fine tubular pores; common fine and medium tubular pores; moderately acid; clear smooth boundary.

Bt1—15 to 31 inches; brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; few fine roots; common fine and medium tubular pores; few faint strong brown (7.5YR 4/6) clay films on faces of peds and in pores; moderately acid; gradual wavy boundary.

Bt2—31 to 43 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; few fine roots; common fine and medium tubular pores; few faint dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; moderately acid; abrupt smooth boundary.

C—43 to 62 inches; yellowish brown (10YR 5/6) silt loam; common fine distinct light yellowish brown (10YR 6/4) and few fine distinct brownish yellow (10YR 6/8) mottles; massive; friable; few fine pores; moderately acid.

Reaction is strongly acid to moderately acid except in areas where lime has been added. The content of fragments ranges from 0 to 10 percent in the A and Bt horizons. The content of fragments in the C horizon is commonly 0 to 35 percent but can range to 60 percent in areas that have a gravelly substratum. Depth to bedrock is more than 5 feet.

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

The BA horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. Texture is silt loam.

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

The C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is silt loam, silty clay loam, or loam.

### Ashwood Series

The Ashwood series consists of moderately deep, well drained soils on upland hillsides. The soils formed in residuum weathered from limestone. Slopes range from 25 to 70 percent.

Typical pedon of Ashwood silt loam, in an area of Ashwood-Rock outcrop complex, 25 to 70 percent slopes, about 1.8 miles southeast of Little Hope, 0.4 mile east of the intersection of Keazy Hollow Road and Big Opossum Creek Road, 0.5 mile west of the intersection of Keazy Hollow Road and Moccasin Creek Road, 200 feet south of Keazy Hollow Road, in a wooded area (atlas sheet 5, lat. 35 degrees 26 minutes 09 seconds N. and long. 87 degrees 45 minutes 14 seconds W.).

A—0 to 11 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium granular structure; friable; common very fine and fine roots; slightly acid; abrupt wavy boundary.

Bt1—11 to 16 inches; dark yellowish brown (10YR 4/4) clay; strong medium subangular blocky structure; very firm; few fine roots; few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; slightly acid; clear wavy boundary.

Bt2—16 to 25 inches; olive brown (2.5Y 5/4) clay; few fine distinct olive (5Y 5/3) mottles; moderate medium subangular blocky structure; very firm; few fine roots; few distinct olive brown (2.5Y 4/4) clay films on faces of peds; few black manganese concretions; neutral; abrupt wavy boundary.

R—25 inches; hard limestone bedrock.

Reaction is moderately acid to mildly alkaline. The 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. Texture is silt loam or silty clay loam.

The Bt horizon has hue of 10YR, 7.5YR, or 2.5Y, value of 4 or 5, and chroma of 4. Some pedons have few mottles in shades of yellow, brown, and gray in the lower part of the Bt horizon. Texture is silty clay or clay.

### Barfield Series

The Barfield series consists of shallow, well drained soils on steep upland hillsides. The soils formed in limestone residuum. Slopes range from 10 to 30 percent.

Typical pedon of Barfield silty clay loam, in an area of Rock outcrop-Barfield complex, 10 to 30 percent slopes, about 2.4 miles north of Clifton, 1.6 miles west of the intersection of Dan Richardson Road and Tennessee Highway 128, about 0.7 mile southeast of the intersection of Dan Richardson Road and County Line Road, 0.2 mile southwest of the intersection of Dan Richardson Road and a farm path, 1100 feet west of the farm path, in a wooded area (atlas sheet 4, lat. 35 degrees 26 minutes 12 seconds N. and long. 87 degrees 57 minutes 41 seconds W.).

A—0 to 5 inches; very dark brown (10YR 2/2) silty clay loam; moderate medium granular structure; friable; many fine and medium roots; few fine pores; few black manganese concretions; slightly alkaline; clear wavy boundary.

Bw—5 to 10 inches; dark brown (10YR 3/3) clay; moderate medium angular blocky structure; very firm; few fine roots; few limestone channers; slightly alkaline; abrupt smooth boundary.

R—10 inches; hard gray limestone.

Reaction ranges from slightly acid to mildly alkaline. Depth to limestone bedrock ranges from 8 to 20 inches.

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

The Bw horizon has hue of 10YR, value of 2 or 3, and chroma of 2 or 3. Some pedons have hue of 10YR or 2.5Y, value of 4, and chroma of 3 or 4 in the lower part of the Bw horizon. Texture is clay or silty clay.

### **Biffle Series**

The Biffle series consists of moderately deep, well drained soils on upland ridgetops and hillsides. The soils formed in residuum derived from granular tripolite. Slopes range from 5 to 60 percent.

Typical pedon of Biffle gravelly silt loam, 30 to 60 percent slopes (fig. 16), about 3.5 miles northeast of Mount Hope, 1.7 miles southeast of the intersection of Moccasin Creek Road and Keazy Hollow Road, 0.4 mile northeast of the intersection of Luna Road and Moccasin Creek Road, 300 feet north of Luna Road, in a wooded area (atlas sheet 9, lat. 35 degrees 24 minutes 29 seconds N. and long. 87 degrees 44 minutes 13 seconds W.).

A—0 to 2 inches; brown (10YR 4/3) gravelly silt loam; weak fine and medium granular structure; very friable; many very fine, fine, and common medium roots; about 22 percent, by volume, fragments of chert; very strongly acid; abrupt wavy boundary.

BE—2 to 10 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine and medium granular structure; very friable; common fine and medium roots and few coarse roots; about 18 percent, by volume, fragments of chert; very strongly acid; gradual wavy boundary.

Bt1—10 to 22 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; moderate fine and medium subangular blocky structure; friable; common fine and medium roots; few distinct yellowish red (5YR 4/6) clay films on faces of peds and coating fragments; about 25 percent, by volume, fragments of chert; very strongly acid; clear wavy boundary.

Bt2—22 to 32 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; weak fine and medium subangular blocky structure; friable; common fine and medium roots; few distinct yellowish red (5YR 4/6) clay films on faces of peds and coating fragments; about 26 percent, by volume, fragments of chert; very strongly acid; abrupt wavy boundary.

Cr—32 to 60 inches; highly weathered, dense bed of granular tripolite.

Reaction ranges from extremely acid to strongly acid. The content of chert fragments ranges from 15 to 35 percent, by volume, throughout the profile. Depth to the weathered tripolite ranges from 20 to 40 inches.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is gravelly silt loam.

The BE or E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is gravelly silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. Some pedons have few mottles in shades of brown, yellow, and red. Texture of the fine-earth fraction is silt loam or silty clay loam. The BC horizon has colors and textures similar to those of the Bt horizon.

The Cr horizon consists of a dense bed of granular tripolite. It has colors in shades of red, brown, yellow, and white.

### **Brandon Series**

The Brandon series consists of very deep, well drained soils on upland ridgetops and hillsides in the southern and middle parts of the county. The soils formed in a thin silty mantle and the underlying gravelly marine deposits. Slopes range from 2 to 20 percent.

Typical pedon of Brandon silt loam, 5 to 12 percent slopes, about 0.9 mile northeast of Cypress Inn, 1.1 miles northeast of the intersection of Big Cypress Road and Pumping Station Road, 0.1 mile south of the intersection of Pumping Station Road and Dodd Road, 100 feet northwest of Little Bethel Church, in a wooded area (atlas sheet 40, lat. 35 degrees 00 minutes 56 seconds N. and long. 87 degrees 48 minutes 15 seconds W.).

A—0 to 2 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium granular structure; very friable; moderately acid; clear smooth boundary.

E—2 to 6 inches; yellowish brown (10YR 5/4) silt loam; moderate medium granular structure; very friable; about 5 percent, by volume, rounded gravel; strongly acid; clear smooth boundary.

Bt1—6 to 24 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; about 10 percent, by volume, rounded gravel; common distinct strong brown (7.5YR 4/6) clay films on faces of peds; strongly acid; gradual wavy boundary.

2Bt2—24 to 34 inches; strong brown (7.5YR 4/6) gravelly clay loam; moderate medium subangular blocky structure; friable; about 30 percent, by volume, rounded gravel; common distinct strong brown (7.5YR 4/6) clay films on faces of peds; strongly acid; clear wavy boundary.

2BC—34 to 42 inches; mottled strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) very gravelly clay loam; moderate fine subangular blocky structure; friable; about 55 percent, by volume, rounded gravel; few faint clay films coating fragments; strongly acid; gradual wavy boundary.



Figure 16.—The gravelly Biffle soils are underlain by weathered tripolite at a depth of 20 to 40 inches.

2C—42 to 60 inches; strong brown (7.5YR 5/6) extremely gravelly clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; massive; firm; about 75 percent, by volume, rounded gravel; strongly acid.

Reaction is strongly acid or very strongly acid. The content of fragments of rounded gravel ranges from 0 to 10 percent in the A, E, and Bt horizons, from 30 to 55 percent in 2Bt horizon, and from 50 to 75 percent in the

2BC and 2C horizons. Depth to bedrock is more than 60 inches.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2. Texture is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture is silty clay loam.

The 2Bt horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is clay loam or silty clay loam.

The 2BC and 2C horizons have hue of 10YR, 7.5YR, 5YR, or 2.5YR, value of 4 or 5, and chroma of 4 to 8. Most pedons have mottles in shades of red, brown, or gray. Texture of the fine-earth fraction is clay loam, loam, or sandy clay loam.

### Braxton Series

The Braxton series consists of very deep, well drained soils on upland ridgetops and hillsides in the northwestern part of the county. The soils formed in limestone residuum and valley fill. Slopes range from 2 to 35 percent.

Typical pedon of Braxton silt loam, 5 to 12 percent slopes, 4.3 miles northwest of Leatherwood, 1.9 miles north of the intersection of Beech Creek Road and Morrison Creek Road, 300 feet north of the intersection of Beech Creek Road and Crossno Cemetery Road, in an idle field (atlas sheet 4, lat. 35 degrees 26 minutes 28 seconds N. and long. 87 degrees 53 minutes 49 seconds W.).

Ap—0 to 5 inches; brown (10YR 4/4) silt loam; moderate fine granular structure; very friable; many very fine and few coarse roots; slightly acid; abrupt smooth boundary.

Bt1—5 to 12 inches; red (2.5YR 4/6) silty clay; moderate medium angular blocky structure; firm; common fine and medium roots; few fine tubular pores; common distinct dark red (2.5YR 3/6) clay films on faces of pedis; common fine black manganese concretions and stains; moderately acid; clear wavy boundary.

Bt2—12 to 58 inches; red (2.5YR 4/6) clay; few fine prominent reddish yellow (7.5YR 6/8) mottles; strong coarse angular blocky structure parting to moderate medium angular blocky; firm; common fine and medium roots; many prominent dark red (2.5YR 3/6) clay films on faces of pedis; common fine black manganese stains; strongly acid; gradual wavy boundary.

Bt3—58 to 72 inches; red (2.5YR 4/6) clay; few fine prominent reddish yellow (7.5YR 6/8) mottles; strong coarse angular blocky structure parting to moderate

medium angular blocky; firm; few fine roots; many prominent dark red (2.5YR 3/6) clay films on faces of pedis; common fine black manganese stains; strongly acid.

Reaction ranges from strongly acid to moderately acid. The content of fragments of chert or sandstone range from 0 to 30 percent in the A and E horizons and from 0 to 15 percent in the Bt horizon. Depth to bedrock is more than 5 feet.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. In severely eroded areas, the horizon has hue of 7.5YR to 2.5YR, value of 4, and chroma of 6. Texture of the fine-earth fraction in severely eroded areas is silty clay loam.

The Bt horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. Texture is clay or silty clay, but in some pedons the upper part can be silty clay loam. Most pedons have few to common mottles in shades of yellow and brown in the lower part.

### Bruno Series

The Bruno series consists of very deep, excessively drained soils on the flood plains of the Tennessee and Buffalo Rivers. The soils formed in loamy and sandy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Bruno sandy loam, frequently flooded, about 2.4 miles north of Clifton, 1,500 feet southwest of the eastern edge of Beech Creek Island, in a field (atlas sheet 4, lat. 35 degrees 25 minutes 09 seconds N. and long. 87 degrees 59 minutes 22 seconds W.).

Ap—0 to 12 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; many very fine and fine roots; neutral; clear wavy boundary.

C1—12 to 36 inches; dark yellowish brown (10YR 4/4) loamy sand; single grain; loose; many very fine and fine roots; neutral; gradual wavy boundary.

C2—36 to 49 inches; yellowish brown (10YR 5/4) sand with thin strata of yellowish brown (10YR 5/6) sandy loam; single grain; loose; common very fine and fine roots; neutral; gradual wavy boundary.

C3—49 to 60 inches; brown (10YR 4/3) loamy sand with thin strata of yellowish brown (10YR 5/4) sand; single grain; loose; common very fine and fine roots; neutral.

Reaction ranges from neutral to slightly acid in all horizons.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is sandy loam or loamy fine sand.

The C horizon has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. Texture is loamy fine sand, loamy sand, or sand.

### Dickson Series

The Dickson series consists of very deep, moderately well drained soils on uplands. The soils formed in a silty mantle and limestone residuum. They have a fragipan in the subsoil. Slopes range from 2 to 8 percent.

Typical pedon of Dickson silt loam, 2 to 5 percent slopes, about 0.4 mile north of Ovilla, 1.4 miles northwest of the intersection of U.S. Highway 64 and Natchez Trace Parkway, 0.4 mile northeast of the intersection of U.S. Highway 64 and Buttermilk Ridge Road, 250 feet west of Buttermilk Ridge Road, in a pasture (atlas sheet 17, lat. 35 degrees 19 minutes 40 seconds N. and long. 87 degrees 34 minutes 56 seconds W.).

- Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; moderately acid; abrupt wavy boundary.
- E—6 to 11 inches; brown (10YR 5/3) silt loam; weak fine and medium granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.
- Bw—11 to 22 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; common fine roots; strongly acid; clear smooth boundary.
- Btx1—22 to 27 inches; yellowish brown (10YR 5/4) silt loam; weak coarse platy structure parting to weak fine and medium subangular blocky; firm; few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; common coarse distinct light brownish gray (10YR 6/2) silt coatings on faces of peds and between peds; common fine manganese concretions; brittle in about 80 percent of the mass; strongly acid; clear irregular boundary.
- Btx2—27 to 33 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct strong brown (7.5YR 5/6) and few fine prominent red (2.5YR 4/6) mottles; weak very coarse prismatic structure parting to moderate medium platy and subangular blocky; common distinct dark yellowish brown (10YR 4/6) coatings on faces of prisms; common coarse prominent light brownish gray (10YR 6/2) and light gray (10YR 7/2) silt coatings in vertical seams between prisms; few fine manganese concretions; about 5 percent, by volume, gravel; strongly acid; clear wavy boundary.
- 2Bt—33 to 60 inches; yellowish red (5YR 4/6) clay; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm; common distinct reddish brown (5YR 4/4) clay films on faces of peds and few medium prominent

grayish brown (10YR 5/2) clay flows between peds; about 5 percent, by volume, gravel; strongly acid.

Reaction is strongly acid or very strongly acid, except in areas where lime has been added. The depth to the fragipan ranges from 18 to 24 inches. The content of chert fragments ranges from 0 to 10 percent in the A, E, and Btx horizons and from 0 to 35 percent in the 2Bt horizon. Depth to bedrock is more than 5 feet.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is silt loam.

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

The Btx horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It has mottles in shades of gray, brown, yellow, and red. Some pedons have an evenly mottled pattern in shades of brown, yellow, and gray. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. It has few to common mottles in shades of gray, brown, yellow, and red. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

### Egam Series

The Egam series consists of very deep, moderately well drained soils on the flood plains along Beech, Eagle, Hardin, and Indian Creeks. The soils formed in fine textured alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Egam silty clay loam, occasionally flooded, 2.2 miles northwest of Leatherwood, 0.8 mile southeast of the intersection of Beech Creek Road and Morrison Creek Road, 2.7 miles northwest of the intersection of Beech Creek Road and Smith Branch Road, 100 feet south of Beech Creek Road, in a cultivated field (atlas sheet 7, lat. 35 degrees 24 minutes 24 seconds N. and long. 87 degrees 53 minutes 01 seconds W.).

- Ap—0 to 9 inches; dark brown (10YR 3/3) silty clay loam; moderate medium granular structure; friable; many very fine and fine roots; slightly acid; abrupt smooth boundary.
- Bw1—9 to 27 inches; very dark brown (10YR 2/2) silty clay; strong medium angular blocky structure; very firm; common fine roots; neutral; clear smooth boundary.
- Bw2—27 to 48 inches; dark brown (10YR 3/3) silty clay; common fine faint dark grayish brown (10YR 4/2) and common fine prominent yellowish brown (10YR 5/8) mottles; strong medium angular blocky structure; very firm; few very fine roots; few manganese concretions; neutral; clear smooth boundary.

**Bw3**—48 to 60 inches; brown (10YR 4/3) silty clay; common fine prominent yellowish brown (10YR 5/8) mottles; moderate medium angular blocky structure; firm; many dark brown (10YR 3/3) coatings on faces of peds; few manganese concretions; neutral.

Reaction is moderately acid to neutral. The depth to bedrock is more than 5 feet.

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

The upper part of the Bw horizon has a hue of 10YR, value of 2 or 3, and chroma of 1 to 3. The lower part has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It has few to common mottles in shades of brown and gray. Texture of the Bw horizon is silty clay or clay.

### Ennis Series

The Ennis series consists of very deep, well drained soils on flood plains. The soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Ennis gravelly silt loam, occasionally flooded, about 0.4 mile northeast of Holt, 1.3 miles southwest of the intersection of Big Cypress Road and Holly Road, 800 feet east of the intersection of Big Cypress Road and Haynes Branch Road, 400 feet south of Big Cypress Road, in a cultivated field (atlas sheet 36, lat. 35 degrees 03 minutes 40 seconds N. and long. 87 degrees 48 minutes 54 seconds W.).

**Ap**—0 to 7 inches; brown (10YR 4/3) gravelly silt loam; moderate medium granular structure; very friable; many very fine and fine roots; about 15 percent, by volume, gravel; moderately acid; clear smooth boundary.

**Bw1**—7 to 14 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak fine subangular blocky structure; friable; common very fine and fine roots; about 15 percent, by volume, gravel; moderately acid; clear wavy boundary.

**Bw2**—14 to 25 inches; yellowish brown (10YR 5/6) gravelly loam; weak medium subangular blocky structure; friable; few fine roots; about 20 percent, by volume, gravel; strongly acid; clear wavy boundary.

**Bw3**—25 to 40 inches; yellowish brown (10YR 5/6) gravelly loam; weak fine subangular blocky structure; friable; few fine roots; about 30 percent, by volume, gravel; strongly acid; clear wavy boundary.

**C**—40 to 60 inches; dark yellowish brown (10YR 4/4) very gravelly loam; massive; friable; about 55 percent, by volume, gravel; strongly acid.

Reaction is moderately acid to very strongly acid, except in areas where lime has been added. The content of fragments ranges from 15 to 30 percent, by volume, in

the Ap and Bw horizons and from 40 to 55 percent in C horizon. Depth to bedrock is more than 5 feet.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture of the fine-earth fraction is loam or silt loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is silt loam or loam.

The C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is loam, sandy loam, or silt loam.

### Guthrie Series

The Guthrie series consists of very deep, poorly drained soils on upland flats and depressions. The soils formed in silty material. They have a fragipan in the lower part of the subsoil. Slopes range from 0 to 2 percent.

Typical pedon of Guthrie silt loam, ponded, about 2.8 miles southwest of Fairview, 1.4 miles southeast of the intersection of Pumping Station Road and George Olive Road, 0.3 mile northwest of the intersection of George Olive Road and Whitten School Road, in a wooded area (atlas sheet 41, lat. 35 degrees 01 minutes 08 seconds N. and long. 87 degrees 43 minutes 03 seconds W.).

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

**Ag**—2 to 10 inches; light brownish gray (10YR 6/2) silt loam; weak medium granular structure; very friable; few black manganese concretions; strongly acid; clear smooth boundary.

**Bg**—10 to 31 inches; gray (10YR 6/1) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; common black manganese concretions; very strongly acid; gradual wavy boundary.

**Btxg1**—31 to 42 inches; gray (10YR 6/1) silt loam; common fine prominent strong brown (7.5YR 5/6) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; common distinct gray (10YR 5/1) clay films on faces of prisms; few black manganese concretions; common coarse prominent light brownish gray (10YR 6/2) silt coatings in vertical seams between prisms; few fragments of chert; brittle in more than 60 percent of the mass; very strongly acid; gradual wavy boundary.

**Btx2**—42 to 60 inches; gray (10YR 6/1) silty clay loam; common fine prominent yellowish red (5YR 5/6) and strong brown (7.5YR 5/6) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; common distinct gray (10YR 5/1) clay films on faces of prisms and in vertical seams; common black manganese concretions;

common coarse prominent light brownish gray (10YR 6/2) silt coatings in vertical seams between prisms; few fragments of chert; brittle in more than 60 percent of the mass; very strongly acid.

Reaction is strongly acid to extremely acid. The depth to the fragipan ranges from 30 to 40 inches. The content of gravel-sized chert fragments ranges from 0 to 10 percent in Btx horizon. Depth to bedrock is more than 5 feet.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. Texture is silt loam.

The Eg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2. Texture is silt loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. It has few to common mottles in shades of red, brown, and yellow. Texture is silt loam.

The Btxg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. It has few to common mottles in shades of yellow, brown, and red. Texture is silty clay loam.

## Humphreys Series

The Humphreys series consists of very deep, well drained soils on toe slopes and stream terraces. The soils formed in a mixture of old alluvium and colluvium. Slopes range from 2 to 12 percent.

Typical pedon of Humphreys gravelly silt loam, 5 to 12 percent slopes, about 1.2 miles northeast of Ashland, 1.4 miles southwest of the intersection of Raspberry Road and Lewis County Line Road, 1.7 miles southeast of the intersection of Raspberry Road and Topsy-Hohenwald Road, 200 feet northwest of Raspberry Road, in a pasture (atlas sheet 6, lat. 35 degrees 27 minutes 01 seconds N. and long. 87 degrees 39 minutes 52 seconds W.).

Ap—0 to 10 inches; dark yellowish brown (10YR 3/4) gravelly silt loam; common medium faint dark brown (10YR 3/3) mottles; weak medium granular structure; very friable; many very fine and fine roots; about 20 percent, by volume, gravel; moderately acid; clear smooth boundary.

Bt1—10 to 36 inches; strong brown (7.5YR 4/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films of faces of peds; about 25 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Bt2—36 to 43 inches; strong brown (7.5YR 4/6) gravelly silty clay loam; weak moderate subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few black manganese concretions; about 30 percent, by volume, gravel; strongly acid; gradual wavy boundary.

C—43 to 60 inches; brown (7.5YR 5/4) very gravelly silty clay loam; massive; about 50 percent, by volume, gravel; very strongly acid.

Reaction is moderately acid to very strongly acid, except in areas where lime has been added. The content of fragments ranges from 15 to 30 percent in the A and Bt horizons and from 30 to 60 percent in the BC and C horizons. Depth to bedrock is more than 5 feet.

The A horizon has hue of 10YR, value of 3, and chroma of 3. In most pedons, the Ap horizon has hue of 10YR, value of 3, and chroma of 3 to 6. It has common to many dark brown mottles. Texture of the fine-earth fraction is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is silty clay loam, loam, and silt loam. Some pedons have a BC horizon that has colors and textures similar to those of the Bt horizon.

The C horizon generally has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6. It rarely has hue of 5YR. Some pedons have mottles in shades of yellow, brown, and gray. Texture of the fine-earth fraction is generally silt loam or silty clay loam, although it can be clay loam.

## Ironcity Series

The Ironcity series consists of very deep, well drained soils on rolling ridgetops and hillsides. The soils formed in a silty mantle, which is about 2 to 3 feet thick and contains fragments of chert and rounded gravel, and in the underlying limestone residuum. Slopes range from 5 to 20 percent.

Typical pedon of Ironcity gravelly silt loam, 5 to 12 percent slopes, about 0.9 mile northeast of Bethlehem, 0.7 mile northeast of the intersection of Keaton Hollow Road and Johnson Hollow Road, 0.6 mile southwest of the intersection of Johnson Hollow Road and Luker Creek Road, 50 feet southeast of Johnson Hollow Road, in a wooded area (atlas sheet 31, lat. 35 degrees 09 minutes 50 seconds N. and long. 87 degrees 36 minutes 12 seconds W.).

A—0 to 1 inch; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; many fine and medium roots; about 15 percent, by volume, fragments of chert; strongly acid; abrupt wavy boundary.

E—1 to 7 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine granular structure; very friable; many fine and medium roots and few coarse roots; about 10 percent, by volume, fragments of chert and about 5 percent, by volume, cobbles; strongly acid; clear wavy boundary.

**Bt1**—7 to 14 inches; yellowish brown (10YR 5/6) gravelly silt loam; weak fine subangular blocky structure; friable; many fine and medium roots and few coarse roots; few distinct yellowish brown (10YR 4/6) clay films on faces of peds; about 20 percent, by volume, fragments of chert; strongly acid; clear wavy boundary.

**Bt2**—14 to 36 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; weak medium subangular blocky structure; friable; common fine and medium roots and few coarse roots; common distinct strong brown (7.5YR 4/6) clay films on faces of peds; common prominent light yellowish brown (10YR 6/4) silt coatings on fragments; about 15 percent, by volume, fragments of chert and about 15 percent cobbles; strongly acid; abrupt wavy boundary.

**2Bt3**—36 to 52 inches; mottled strong brown (7.5YR 5/8), light yellowish brown (10YR 6/4), and red (2.5YR 4/6) gravelly silty clay; firm; few fine roots; moderate medium angular blocky structure; many distinct brown (10YR 4/4) clay films on faces of peds; about 10 percent, by volume, fragments of chert and about 5 percent, by volume, cobbles; strongly acid; clear wavy boundary.

**2Bt4**—52 to 60 inches; mottled red (2.5YR 4/6), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/4) very gravelly silty clay; firm; few fine roots; weak medium angular blocky structure; many distinct brown (10YR 4/4) clay films on faces of peds; about 45 percent, by volume, fragments of chert and about 5 percent, by volume, cobbles; strongly acid; clear wavy boundary.

Reaction is strongly acid or very strongly acid, except for the surface layer in areas that have been limed. The content of chert fragments ranges from 15 to 25 percent in A and E horizons, from 15 to 35 percent in the Bt horizon, and from 15 to 50 percent in the 2Bt horizon. Depth to bedrock is more than 5 feet.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is gravelly silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is gravelly silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 6 or 8. Texture of the fine-earth fraction is silt loam or silty clay loam.

The 2Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8 or is an evenly mottled pattern in shades of brown and red. Texture of the fine-earth fraction is silty clay loam, silty clay, clay loam, or clay.

## Lax Series

The Lax series consists of very deep, moderately well drained soils on upland ridgetops and toe slopes. The soils formed in a silty mantle and in the underlying gravelly alluvium and limestone residuum. They have a dense fragipan in the subsoil. Slopes range from 2 to 12 percent.

Typical pedon of Lax silt loam, 2 to 5 percent slopes, about 5.4 miles south of Collinwood, 0.6 mile southeast of the intersection of Tennessee Highway 13 and Little Cypress Creek Road, 0.6 mile northwest of the intersection of Little Cypress Creek Road and Jesse Littleton Road, 100 feet north of Little Cypress Creek Road, in a cultivated field (atlas sheet 34, lat. 35 degrees 06 minutes 40 seconds N. and long. 87 degrees 44 minutes 53 seconds W.).

**Ap**—0 to 5 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine and fine roots; strongly acid; abrupt smooth boundary.

**Bt1**—5 to 13 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; strongly acid; clear wavy boundary.

**Bt2**—13 to 27 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; about 10 percent, by volume, gravel; few fine roots; few distinct yellowish brown (10YR 4/6) clay films on faces of peds; strongly acid; clear smooth boundary.

**2Bx1**—27 to 39 inches; brownish yellow (10YR 6/6) gravelly silty clay loam; common medium prominent yellowish red (5YR 4/6) and light brownish gray (10YR 6/2) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; very firm; few prominent dark yellowish brown (10YR 4/6) clay films on prism faces and in vertical seams; light gray (10YR 7/2) silt coatings in vertical seams; about 30 percent, by volume, rounded gravel; brittle in more than 70 percent of the mass; strongly acid; gradual wavy boundary.

**2Bx2**—39 to 49 inches; yellowish brown (10YR 5/6) very gravelly silty clay; common medium distinct red (5YR 4/6) and grayish brown (10YR 5/2) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; very firm; few prominent dark yellowish brown (10YR 4/6) clay films on prism faces and coating fragments; common coarse prominent light gray (10YR 7/2) silt loam in vertical seams and coating prisms and fragments; about 40 percent, by volume, rounded and angular fragments; brittle in

more than 90 percent of the mass; strongly acid; gradual wavy boundary.

2Cx—49 to 60 inches; yellowish red (5YR 4/6) very gravelly silty clay loam; common coarse prominent gray (10YR 5/1) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very firm; about 45 percent, by volume, rounded and angular gravel; brittle in 40 percent of the mass; strongly acid.

Reaction is strongly or very strongly acid, except in areas where lime has been added. Depth to fragipan ranges from 20 to 30 inches. The content of fragments ranges from 0 to 10 percent in the A, E, and Bt horizons and from 15 to 70 percent in 2Btx and 2Cx horizons.

The A and Ap horizons have hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is silt loam.

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

The 2Btx horizon has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. It has few to many mottles in shades of gray, yellow, red, and brown. Texture of the fine-earth fraction is silt loam or silty clay loam.

The 2C horizon and the 2BC horizon have hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. However, in many pedons these horizons are an evenly mottled pattern in shades of gray, yellow, brown, and red. Texture of the fine-earth fraction is silty clay loam or silty clay. Some pedons have a 3Bt horizon that has colors and textures similar to those of the 2C horizon.

## Lee Series

The Lee series consists of very deep, poorly drained soils on flood plains. The soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Lee gravelly silt loam, occasionally flooded, about 3.9 miles southwest of Fairview, 1.3 miles southeast of the intersection of Middle Cypress Creek Road and Pumping Station Road, 0.3 mile northeast of the intersection of Middle Cypress Creek Road and Whitten School Road, 500 feet east of Middle Cypress Creek Road, in a cultivated field (atlas sheet 41, lat. 35 degrees 00 minutes 49 seconds N. and long. 87 degrees 43 minutes 43 seconds W.).

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly silt loam; weak fine granular structure; friable; about 15 percent, by volume, gravel; moderately acid; clear smooth boundary.

Bg1—7 to 13 inches; gray (10YR 5/1) gravelly silt loam; few fine prominent strong brown (7.5YR 5/6) mottles;

weak fine subangular blocky structure; friable; about 20 percent, by volume, gravel; strongly acid; clear wavy boundary.

Bg2—13 to 34 inches; gray (10YR 6/1) gravelly silt loam; common fine prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; about 25 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Cg—34 to 60 inches; gray (10YR 6/1) very gravelly silt loam; common fine prominent strong brown (7.5YR 5/6) mottles; massive; friable; about 55 percent, by volume, gravel; strongly acid.

Reaction is strongly acid or very strongly acid, except in areas where lime has been added. The content of fragments ranges from 15 to 20 percent in Ap horizon, from 15 to 35 percent in the Bg horizon, and from 25 to 60 percent in the Cg horizon. Depth to bedrock is more than 5 feet.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. Texture of the fine-earth fraction is silt loam or loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or less. It has few to common mottles in shades of yellow, brown, and red. Texture of the fine-earth fraction is silt loam or loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or less. It has few to common mottles in shades of yellow, brown, and red. Texture of the fine-earth fraction is loam or silt loam.

## Lindell Series

The Lindell series consists of very deep, moderately well drained soils on the flood plains of major streams. The soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Lindell silt loam, occasionally flooded, 2.5 miles northwest of Clifton Junction, 0.8 mile south of the intersection of Clifton Turnpike and Tennessee Highway 114, 0.4 mile southeast of the intersection of Tennessee Highway 114 and Hideout Hollow Road, 300 feet east of Tennessee Highway 114, in a cultivated field (atlas sheet 11, lat. 35 degrees 14 minutes 15 seconds N. and long. 87 degrees 54 minutes 40 seconds W.).

Ap—0 to 9 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

Bw1—9 to 23 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; few black manganese stains; moderately acid; clear smooth boundary.

Bw2—23 to 39 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light brownish gray

(10YR 6/2) mottles; weak fine subangular blocky structure; friable; common fine roots; common black manganese concretions and stains; few fine gravel; moderately acid; clear wavy boundary.

Cg—39 to 60 inches; light brownish gray (10YR 6/2) loam; few fine distinct yellowish brown (10YR 5/4) mottles; massive; friable; common black manganese concretions; about 10 percent, by volume, gravel; moderately acid.

Reaction ranges from moderately acid to neutral. The content of gravel fragments ranges from 0 to 10 percent in the lower part of the Bw horizon and from 0 to 30 percent in the Cg horizon. Depth to bedrock is more than 5 feet.

The Ap or A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It has few to common mottles in shades of brown or gray. The lower part of the Bw horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. It has few to many mottles in shades of gray and brown. Some pedons have an evenly mottled pattern in shades of brown and gray. Texture is silt loam, silty clay loam, or loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 5 or 6, chroma of 2 or less, or is an evenly mottled pattern in shades of brown and gray. Texture is silt loam, loam, or the gravelly analogs of these textures.

## Lobelville Series

The Lobelville series consists of very deep, moderately well drained soils on flood plains. The soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Lobelville gravelly silt loam, occasionally flooded, about 3.4 miles west of Fairview, 0.7 mile west of the intersection of Pumping Station Road and George Olive Road, 0.6 mile east of the intersection of May Branch Road and Middle Cypress Creek Road, 0.3 mile east of the intersection of Middle Cypress Creek Road and a farm path, 250 feet north of the farm path, in a cultivated field (atlas sheet 41, lat. 35 degrees 02 minutes 02 seconds N. and long. 87 degrees 44 minutes 19 seconds W.).

Ap—0 to 7 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; many fine and very fine roots; about 15 percent, by volume, gravel; moderately acid; clear wavy boundary.

Bw1—7 to 19 inches; yellowish brown (10YR 5/4) gravelly loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine roots; about 15 percent,

by volume, gravel; strongly acid; clear wavy boundary.

Bw2—19 to 25 inches; yellowish brown (10YR 5/4) gravelly clay loam; common medium distinct light brownish gray (10YR 6/2) and light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; few fine roots; about 20 percent, by volume, gravel; strongly acid; clear wavy boundary.

Bg—25 to 35 inches; gray (10YR 6/1) gravelly clay loam; common medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; few fine iron and manganese concretions; about 25 percent, by volume, gravel; strongly acid; clear wavy boundary.

BCg—35 to 41 inches; gray (10YR 6/1) gravelly loam; common fine distinct yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; friable; few fine iron and manganese concretions; about 30 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Cg—41 to 60 inches; gray (10YR 6/1) extremely gravelly sandy loam; common fine distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) mottles; massive; friable; about 75 percent, by volume, gravel; strongly acid.

Reaction is moderately acid to strongly acid, except in areas where lime has been added. The content of fragments ranges from 5 to 25 percent in A and the Bw horizons, from 10 to 30 percent in the Bg and BCg horizons, and from 35 to 80 percent in the C horizon. Depth to bedrock is more than 60 inches.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture of the fine-earth fraction is silt loam or loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. It has few to common mottles in shades of brown or gray. Texture of the fine-earth fraction is silt loam, loam, clay loam, or silty clay loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has few to many mottles in shades of brown. Texture of the fine-earth fraction is loam, silt loam, silty clay loam, or clay loam.

The BCg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has few to many mottles in shades of brown. Texture of the fine-earth fraction is loam, silt loam, silty clay loam, or clay loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It has few to many mottles in shades of brown. Texture of the fine-earth fraction is loam, sandy loam, or silt loam.

## Luverne Series

The Luverne series consists of very deep, well drained soils on upland ridgetops and hillsides. The soils formed in stratified marine deposits. Slopes range from 2 to 20 percent.

Typical pedon of Luverne fine sandy loam, 5 to 12 percent slopes, about 0.3 mile west of Cromwell Crossroads, 0.2 mile east of the intersection of Tennessee Highway 203 and Sherrell Lane, 100 feet north of Tennessee Highway 203, in a pasture (atlas sheet 29, lat. 35 degrees 08 minutes 13 seconds N. and long. 87 degrees 49 minutes 54 seconds W.).

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots and few coarse roots; moderately acid; abrupt smooth boundary.

E—5 to 11 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots and few coarse roots; strongly acid; clear wavy boundary.

Bt1—11 to 24 inches; yellowish red (5YR 5/6) clay loam; weak medium subangular blocky structure; firm; many very fine and fine roots and few coarse roots; common distinct yellowish red (5YR 4/6) clay films on faces of peds; few fine mica flakes; strongly acid; clear wavy boundary.

Bt2—24 to 30 inches; yellowish red (5YR 5/6) clay loam that has a few pockets of red (10R 4/6) sandy loam; common medium prominent brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; firm; common prominent yellowish red (5YR 4/6) clay films on faces of peds and in pores; few fine mica flakes; strongly acid; abrupt wavy boundary.

C—30 to 60 inches; red (10R 4/6) loamy sand that has strata of yellowish red (5YR 5/6) and brownish yellow (10YR 6/8) clay loam; massive; very friable; few distinct yellowish red (5YR 4/6) clay films along some of the horizontal strata; thin horizontal plates of ironstone; strongly acid.

Reaction is very strongly acid to strongly acid, except in areas where the surface layer has been limed. The content of fragments of gravel and ironstone ranges from 0 to 5 percent in all horizons. Depth to bedrock is more than 5 feet.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is fine sandy loam.

The E horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 or 4. Texture is fine sandy loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. It has few to many mottles in shades of red, yellow, or brown. Texture is clay loam,

sandy clay, or clay. Some pedons have a BC horizon that has colors similar to those of the Bt horizon and has texture of clay loam or sandy clay loam.

The C horizon consists of stratified layers of loamy sand and clay loam. The sandy strata have hue of 10R to 5YR, value of 4 or 5, and chroma of 4 to 8. The more clayey strata have hue of 10YR to 5YR and have mottles in shades of brown and yellow.

## Minvale Series

The Minvale series consists of very deep, well drained soils on foot slopes. The soils formed in colluvium. Slopes range from 12 to 30 percent.

Typical pedon of Minvale gravelly silt loam, 20 to 30 percent slopes, 1.2 miles northeast of Ashland, 1.8 miles southwest of the intersection of Raspberry Road and Lewis County Line Road, 1.1 miles southeast of the intersection of Raspberry Road and Topsy-Hohenwald Road, 200 feet north of Raspberry Road, in a wooded area (atlas sheet 6, lat. 35 degrees 27 minutes 14 seconds N. and long. 87 degrees 40 minutes 35 seconds W.).

A—0 to 5 inches; brown (10YR 4/3) gravelly silt loam; weak medium granular structure; very friable; many very fine and fine and few medium roots; about 20 percent, by volume, fragments of chert; strongly acid; abrupt smooth boundary.

E—5 to 10 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine subangular blocky structure; friable; many very fine and fine and few medium roots; about 30 percent, by volume, fragments of chert and about 2 percent cobbles; strongly acid; clear wavy boundary.

Bt1—10 to 33 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; moderate fine subangular blocky structure; friable; common very fine and fine and few medium roots; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; about 30 percent, by volume, fragments of chert and about 2 percent cobbles; strongly acid; clear wavy boundary.

Bt2—33 to 49 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; about 30 percent, by volume, fragments of chert and about 5 percent cobbles; strongly acid; gradual wavy boundary.

Bt3—49 to 60 inches; yellowish red (5YR 5/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; few distinct yellowish red (5YR 4/6) clay films on faces of peds; about 35 percent, by volume, fragments of chert; strongly acid.

Reaction is strongly acid to very strongly acid. The

content of fragments ranges from 15 to 35 percent in all horizons. Depth to bedrock is more than 5 feet.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture of the fine-earth fraction is silt loam.

The Bt horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 4 to 8. Texture of the fine-earth fraction is silty clay loam.

### Mountview Series

The Mountview series consists of very deep, well drained soils on upland ridgetops and side slopes. The soils formed in a silty mantle that is 2 to 3 feet thick and is underlain by limestone residuum.

Typical pedon of Mountview silt loam, 5 to 12 percent slopes, about 1.4 miles north of Ovilla, 1.7 miles northwest of the intersection of U.S. Highway 64 and the Natchez Trace Parkway, 1.4 miles north of the intersection of U.S. Highway 64 and Buttermilk Ridge Road, 1,000 feet west of Buttermilk Ridge Road, in a cultivated field (inset to atlas sheet 10, lat. 35 degrees 20 minutes 45 seconds N. and long. 87 degrees 34 minutes 57 seconds W.).

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

E—5 to 13 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; very friable; common fine roots; strongly acid; clear wavy boundary.

Bt1—13 to 24 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint brown (7.5YR 5/4) clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Bt2—24 to 43 inches; red (2.5YR 4/8) silty clay loam; common medium distinct strong brown (7.5YR 5/8) mottles; moderate fine subangular blocky structure; friable; many prominent red (2.5YR 4/6) clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Bt3—43 to 60 inches; red (2.5YR 4/6) silty clay; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular and angular blocky structure; firm; many prominent dark red (2.5YR 3/6) clay films on faces of peds; about 10 percent, by volume, fragments of chert; very strongly acid.

Reaction is strongly or very strongly acid, except in areas where lime has been added. The content of fragments ranges from 0 to 5 percent in the A, E, and Bt

horizons and from 5 to 35 percent in 2Bt horizon. Depth to bedrock is more than 5 feet.

The Ap or A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The E horizon has hue of 10YR, value of 5, and chroma of 3 or 4. Texture is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. Texture is silty clay loam or silt loam.

The 2Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma 4 or 8. Some pedons have few to common mottles in shades of brown, yellow, and red. Texture is gravelly silty clay loam, gravelly silty clay, silty clay loam, or silty clay.

### Pickwick Series

The Pickwick series consists of very deep, well drained soils on high stream terraces. The soils formed in old alluvium. Slopes range from 2 to 20 percent.

Typical pedon of Pickwick silt loam, 5 to 12 percent slopes, about 5.3 miles southwest of Ovilla, 0.8 mile southeast of the intersection of Natchez Trace Parkway and Factory Creek Road, 0.2 mile northwest of the intersection of Factory Creek Road and Roy Haggard Road, 100 feet northeast of Factory Creek Road, in a cultivated field (atlas sheet 23, lat. 35 degrees 14 minutes 06 seconds N. and long. 87 degrees 37 minutes 34 seconds W.).

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; very friable; common fine and very fine roots; moderately acid; abrupt smooth boundary.

BA—5 to 9 inches; brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bt1—9 to 25 inches; yellowish red (5YR 4/6) silty clay loam; moderate fine subangular blocky structure; friable; common fine and medium roots; common faint reddish brown (5YR 4/4) clay films on faces of peds; few black manganese concretions; strongly acid; clear wavy boundary.

Bt2—25 to 40 inches; yellowish red (5YR 4/6) silty clay loam; moderate and strong fine angular blocky structure; friable; common fine roots; many distinct red (2.5YR 4/6) clay films on faces of peds; few black manganese concretions; strongly acid; gradual smooth boundary.

Bt3—40 to 60 inches; red (2.5YR 4/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; many prominent dark red (2.5YR 3/6) clay films on faces of peds; few black manganese concretions; about 15 percent rounded gravel, by volume; strongly acid.

Reaction is strongly or very strongly acid, except in areas where lime has been added. The lower part of the Bt horizon has about 5 to 35 percent small bands of rounded gravel. Depth to bedrock is more than 5 feet.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. Texture is silt loam. Pedons in severely eroded areas have hue of 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture is silty clay loam or silt loam.

The BA horizon, if it occurs, has hue of 10YR and 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture is silt loam or silty clay loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. In some pedons, the upper part of the Bt horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture is silty clay loam. In most pedons, the lower part of the Bt horizon commonly contains rounded gravel ranging from 5 to 35 percent.

### Pruitton Series

The Pruitton series consists of very deep, well drained soils on flood plains. The soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Pruitton silt loam, occasionally flooded, about 0.4 mile southeast of Houston, 0.4 mile southeast of the intersection of Indian Creek Road and Rayburn Creek Road, 1500 feet northeast of Rayburn Creek Road and Indian Creek bridge, in a cultivated field (atlas sheet 21, lat. 35 degrees 14 minutes 15 seconds N. and long. 87 degrees 54 minutes 40 seconds W.).

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; about 5 percent, by volume, rounded gravel; slightly acid; clear wavy boundary.

Bw1—10 to 15 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; common fine roots; few rounded gravel; moderately acid; gradual wavy boundary.

Bw2—15 to 34 inches; dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky structure; friable; few fine roots; few rounded gravel; strongly acid; gradual wavy boundary.

2C—34 to 60 inches; dark yellowish brown (10YR 4/4) gravelly loam; massive; friable; about 25 percent, by volume, rounded gravel; strongly acid.

Reaction is moderately acid to strongly acid, except in areas where lime has been added. The content of gravel and chert fragments ranges from 0 to 10 percent in the Ap and Bw horizons and from 15 to 75 percent in the 2C horizon. Depth to bedrock is more than 60 inches.

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

The Bw horizon has hue of 10YR or 7.5YR, value of 4

or 5, and chroma of 3 to 6. Texture is silt loam or loam.

The 2C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Some pedons have few to common mottles in shades of yellow, brown, and gray. Texture of the fine-earth fraction is silt loam, loam, or fine sandy loam.

### Riverby Series

The Riverby series consists of very deep, excessively drained soils on flood plains. The soils formed in gravelly alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Riverby gravelly sandy loam, frequently flooded, about 1.9 miles east of Little Hope, 1.6 miles southeast of the intersection of Tennessee Highway 13 and Mayberry Road, 0.7 mile northeast of the intersection of Mayberry Road and Big Opossum Creek Road, 300 feet south of Big Opossum Creek Road, in a wooded area (atlas sheet 6, lat. 35 degrees 27 minutes 03 seconds N. and long. 87 degrees 44 minutes 48 seconds W.).

A—0 to 14 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; weak fine granular structure; very friable; many very fine and fine roots and common medium roots; about 15 percent, by volume, rounded gravel; few pockets of sand; moderately acid; clear smooth boundary.

C1—14 to 23 inches; dark yellowish brown (10YR 4/4) extremely gravelly coarse sandy loam; single grain; loose; many very fine roots; about 75 percent, by volume, rounded gravel and about 5 percent cobbles; slightly acid; gradual wavy boundary.

C2—23 to 38 inches; dark yellowish brown (10YR 4/4) very gravelly coarse sandy loam; single grain; loose; common fine and medium roots; about 45 percent, by volume, rounded gravel; few pockets of sand; slightly acid; gradual wavy boundary.

C3—38 to 49 inches; dark yellowish brown (10YR 4/4) extremely gravelly coarse sandy loam; single grain; loose; few fine roots; about 80 percent, by volume, rounded gravel and about 5 percent cobbles; slightly acid; gradual wavy boundary.

C4—49 to 60 inches; brown (10YR 5/3) extremely gravelly coarse sandy loam; single grain; loose; about 80 percent, by volume, rounded gravel; many black coatings on gravel; slightly acid.

Reaction ranges from strongly acid to neutral. The content of gravel fragments ranges from 10 to 60 percent in the A horizon and from 35 to 95 percent in the C horizon. The content of cobbles ranges from 5 to 50 percent in parts of the C horizon. Depth to bedrock is more than 5 feet.

The A horizon and the Ap horizon have hue of 10YR,

value of 3 to 5, and chroma of 2 to 4. If value and chroma are less than 3.5, the A horizon is 6 inches or less in thickness. Texture of the fine-earth fraction is sandy loam, loamy sand, or loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Some pedons have thin strata that have value of 3 and chroma of 3. Texture of the fine-earth fraction is coarse sandy loam. Some pedons have thin strata or pockets of loamy sand or sand.

### Saffell Series

The Saffell series consists of very deep, well drained soils on dissected hillsides. The soils formed in gravelly alluvium and loamy marine deposits. Slopes are 12 to 60 percent.

Typical pedon of Saffell gravelly fine sandy loam, 12 to 20 percent slopes, about 4.4 miles east of Cypress Inn, 0.7 mile south of the intersection of Pumping Station Road and Middle Cypress Creek Road, 0.7 mile northwest of the intersection of Middle Cypress Creek Road and Whitten School Road, 350 feet west of Middle Cypress Creek Road, in a pasture (atlas sheet 41, lat. 35 degrees 00 minutes 54 seconds N. and long. 87 degrees 44 minutes 11 seconds W.).

Ap—0 to 6 inches; brown (10YR 4/3) gravelly fine sandy loam; weak fine granular structure; very friable; about 20 percent, by volume, gravel; strongly acid; abrupt smooth boundary.

E—6 to 12 inches; brown (7.5YR 4/4) gravelly fine sandy loam; weak fine subangular blocky structure; very friable; about 20 percent, by volume, gravel; strongly acid; clear smooth boundary.

Bt1—12 to 22 inches; strong brown (7.5YR 5/6) very gravelly sandy clay loam; moderate medium subangular blocky structure; friable; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; about 40 percent, by volume, gravel; strongly acid; clear wavy boundary.

Bt2—22 to 36 inches; strong brown (7.5YR 5/6) very gravelly sandy loam; weak medium subangular blocky structure; friable; few faint brown (7.5YR 5/4) clay films on faces of peds; about 50 percent, by volume, gravel; strongly acid; gradual wavy boundary.

C—36 to 60 inches; strong brown (7.5YR 5/8) extremely gravelly loamy sand; single grain; loose; about 75 percent, by volume, gravel; strongly acid.

Reaction is strongly acid to very strongly acid, except in areas where lime has been added. The content of fragments ranges from 15 to 35 percent in the A and E horizons, from 35 to 60 percent in the Bt horizon, and from 55 to 80 percent in the C horizon. Depth to bedrock is more than 5 feet.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. Texture of the fine-earth fraction is fine sandy loam, silt loam, or sandy loam.

The E horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is fine sandy loam, silt loam, or sandy loam.

The Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is clay loam, sandy clay loam, fine sandy loam, or loam.

The C horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. Texture of the fine-earth fraction is loamy sand, sandy loam, or sandy clay loam. Some pedons are stratified with these textures.

### Silerton Series

The Silerton series consists of very deep, well drained soils on upland ridgetops. The soils formed in a silty mantle and the underlying clayey marine deposits. Slopes range from 2 to 12 percent.

Typical pedon of Silerton silt loam, 2 to 5 percent slopes, about 3.9 miles north of Ransom Stand, 0.7 mile northeast of the intersection of Johnson Road and Grassy Creek Road, 0.8 mile southwest of the intersection of Walker Johnson Road and Grassy Creek Road, 25 feet south of Grassy Creek Road, in a wooded area (atlas sheet 32, lat. 35 degrees 05 minutes 19 seconds N. and long. 87 degrees 57 minutes 40 seconds W.).

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

Bt1—4 to 10 inches; dark yellowish brown (10YR 4/6) silty clay loam; weak medium subangular blocky structure parting to weak medium granular; friable; many very fine and fine roots and few medium roots; strongly acid; clear wavy boundary.

Bt2—10 to 22 inches; yellowish brown (10YR 5/6) silty clay loam; weak coarse subangular blocky structure; friable; common very fine and fine roots and few medium roots; few faint yellowish brown (10YR 5/4) clay skins on faces of peds; few faint iron stains around root channels; strongly acid; clear wavy boundary.

2Bt/E—22 to 27 inches; yellowish brown (10YR 5/6) loam in the 2Bt part; few fine distinct strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; common very fine and fine roots and few medium roots; common distinct yellowish brown (10YR 4/6) clay films on faces of peds; few fine prominent red (2.5YR 4/6) peds; brown (10YR 5/3) loam in streaks and pockets in the E part; few clean sand grains; strongly acid; abrupt wavy boundary.

2Bt1—27 to 32 inches; variegated yellowish brown (10YR

5/6), red (2.5YR 4/6), and brown (10YR 5/3) clay loam; moderate medium subangular blocky structure; firm; few fine and medium roots; common distinct yellowish red (5YR 4/6) clay films on faces of peds; very strongly acid; clear wavy boundary.

2Bt2—32 to 60 inches; red (2.5YR 4/6) clay; many medium prominent yellowish brown (10YR 5/6) streaks and pockets; moderate coarse and medium subangular blocky structure; firm; few very fine and fine roots; many prominent dark red (2.5YR 3/6) clay films on faces of peds; strongly acid.

Reaction is strongly acid or very strongly acid, except in areas where lime has been added. Depth to bedrock is more than 5 feet.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 3 or 4. If value is less than 3.5, the thickness of the horizon is less than 6 inches. Texture is silt loam.

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

If the horizon is present, the 2Bt part of the 2Bt/E horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. It has few to many mottles in shades of brown and red. Texture is silt loam, loam, or silty clay loam. The E part has hue of 10YR, value of 5 to 7, and chroma of 3. Texture is loam or silt loam.

The 2Bt horizon has hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8. Some pedons have few to many mottles in shades of brown, yellow, gray, and red. Other pedons are in an evenly mottled pattern of the colors described above. Some pedons have few to common ironstone fragments or rounded gravel. Texture is clay loam, sandy clay, silty clay, or clay.

## Sugargrove Series

The Sugargrove series consists of deep, well drained soils on upland ridgetops and hillsides. The soils formed in loamy residuum derived from siltstone, limestone, and shale. Slopes range from 5 to 20 percent.

Typical pedon of Sugargrove channery silt loam, 5 to 12 percent slopes, about 4.0 miles southeast of Ovilla, 1.4 miles southeast of the intersection of U.S. Highway 64 and Fortyeight Creek Road, 1.0 mile north of the intersection of Fortyeight Creek Road and Granny Scott Hollow Road, 250 feet west of Fortyeight Creek Road, in a wooded area (atlas sheet 16, lat. 35 degrees 19 minutes 22 seconds N. and long. 87 degrees 39 minutes 24 seconds W.).

A—0 to 3 inches; brown (10YR 5/3) channery silt loam; weak fine granular structure; very friable; many very fine and fine roots and few medium and coarse roots; about 15 percent, by volume, channers of siltstone

and fragments of chert; strongly acid; abrupt smooth boundary.

E—3 to 13 inches; light yellowish brown (10YR 6/4) channery silt loam; weak fine granular structure; very friable; many very fine and fine roots and few medium and coarse roots; about 20 percent, by volume, channers of siltstone and fragments of chert; strongly acid; clear wavy boundary.

Bt1—13 to 24 inches; strong brown (7.5YR 5/6) channery silty clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; few faint strong brown (7.5YR 4/6) clay films on faces of peds and coating fragments; about 20 percent, by volume, channers of siltstone; strongly acid; gradual wavy boundary.

Bt2—24 to 31 inches; yellowish red (5YR 5/6) channery silty clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; common distinct strong brown (7.5YR 4/6) clay films on faces of peds and coating fragments; about 20 percent, by volume, channers of siltstone; strongly acid; clear wavy boundary

C—31 to 46 inches; strong brown (7.5YR 5/6) very channery silty clay loam; massive; firm; few fine and medium roots in horizontal cracks between fragments; few distinct strong brown (7.5YR 4/6) silt and clay coatings on fragments; about 55 percent, by volume, channers of siltstone; strongly acid; abrupt wavy boundary.

Cr—46 to 60 inches; horizontally bedded, highly fractured, siltstone; thin strata of silty clay loam soil material between fragments and coating fragments.

Reaction is strongly acid to very strongly acid, except in areas where lime has been added. The content of fragments ranges from 10 to 35 percent in the A, E, and Bt horizons and from 15 to 55 percent in the C horizon. Depth to the paralithic contact ranges from 40 to 60 inches. Hard bedrock is at a depth of more than 5 feet.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture of the fine-earth fraction is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture of the fine-earth fraction is silt loam.

The upper part of the Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 or 6. The lower part of the Bt horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 or 6. In some pedons it has mottles in shades of red or brown. Texture of the fine-earth fraction is silt loam or silty clay loam.

The C horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 to 8. Some pedons have few to common mottles in shades of brown and red. Texture of the

fine-earth fraction is silt loam, silty clay loam, silty clay, or clay.

The Cr horizon is horizontally bedded, highly fractured siltstone and chert interlayered with thin strata of silty clay loam.

### Sulphura Series

The Sulphura series consists of moderately deep, somewhat excessively drained soils on highly dissected hillsides. The soils formed in a mixture of residuum derived from siltstone, limestone, and shale. Slopes range from 15 to 60 percent.

Typical pedon of Sulphura channery silt loam, in an area of Sulphura-Rock outcrop complex, 30 to 75 percent slopes, about 1.6 miles north of Ashland, 1.9 miles east of the intersection of the Topsy-Hohenwald Road and Raspberry Road, 1.1 miles southwest of the intersection of Lewis County Line Road and Raspberry Road, 100 feet east of Raspberry Road, in a wooded area (atlas sheet 6, lat. 35 degrees 27 minutes 27 seconds N. and long. 87 degrees 39 minutes 46 seconds W.).

A—0 to 5 inches; brown (10YR 4/3) channery silt loam; weak fine granular structure; friable; many fine and very fine roots; about 25 percent, by volume, channers of siltstone and angular fragments of chert; strongly acid; clear wavy boundary.

Bw1—5 to 16 inches; yellowish brown (10YR 5/4) very channery silt loam; moderate fine subangular blocky structure; friable; common fine and very fine roots; about 50 percent, by volume, channers of siltstone; strongly acid; gradual wavy boundary.

Bw2—16 to 23 inches; brown (7.5YR 5/4) very channery silt loam; moderate fine subangular blocky structure; friable; common fine roots; 60 percent, by volume, channers of siltstone; strongly acid.

R—23 inches; hard siltstone.

Reaction is moderately acid to strongly acid in the upper part of the profile. It ranges from strongly acid to slightly acid in the lower part. The content of fragments of siltstone and chert range from 15 to 25 percent in the A and E horizons and from 35 to 60 percent in the B horizon. Depth to hard siltstone or limestone bedrock ranges from 21 to 40 inches and is commonly less than 30 inches.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam.

The Bw or Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture of the fine-earth fraction is silt loam or silty clay loam.

The Cr horizon is horizontally bedded, highly fractured siltstone.

### Taft Series

The Taft series consists of very deep, somewhat poorly drained soils on upland flats and in slight depressions. The soils formed in silty material and the underlying limestone residuum. The soils have a fragipan in the subsoil. Slopes range from 0 to 2 percent.

Typical pedon of Taft silt loam, about 2.8 miles southwest of Fairview, 1.4 miles southeast of the intersection of Pumping Station Road and George Olive Road, 0.4 mile northwest of the intersection of George Olive Road and Whitten School Road, in a wooded area (atlas sheet 41, lat. 35 degrees 01 minutes 09 seconds N. and long. 87 degrees 43 minutes 07 seconds W.).

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

E—2 to 8 inches; pale brown (10YR 6/3) silt loam; few fine faint light brownish gray (10YR 6/2) mottles; weak medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

Bw—8 to 18 inches; light olive brown (2.5Y 5/4) silt loam; common medium prominent light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.

E'/Bx—18 to 21 inches; light brownish gray (10YR 6/2) silt loam in the E part; weak fine subangular blocky structure; very friable; few black manganese concretions and nodules; few very fine roots; yellowish brown (10YR 5/4) silty clay loam in the Bx part; common medium faint brown (10YR 5/3) mottles; weak medium subangular blocky structure; firm; brittle in about 30 percent of the mass; very strongly acid; clear irregular boundary.

Btx1—21 to 38 inches; light olive brown (2.5Y 5/4) silt loam; common medium prominent yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm; few faint light olive brown (2.5Y 5/6) clay films on prism faces and in vertical seams; common black manganese concretions; tongues of light brownish gray (10YR 6/2) silt loam in vertical seams between prisms; brittle in 60 percent of the mass; very strongly acid; gradual wavy boundary.

Btx2—38 to 57 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/6), and light olive brown (2.5Y 5/4) silty clay loam; common fine prominent yellowish red (5YR 5/8) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; very firm; common distinct light brownish gray (10YR 6/2) clay films on prism faces and in vertical

seams; common black manganese concretions; tongues of gray (10YR 6/1) and light brownish gray (10YR 6/2) silty clay loam in vertical seams; brittle in 60 percent of the mass; very strongly acid; gradual wavy boundary.

2Bt—57 to 60 inches; yellowish red (5YR 5/6) silty clay loam; common medium prominent gray (10YR 6/1) mottles; moderate medium subangular blocky structure; firm; common prominent vertical seams of gray (10YR 5/1) silty clay; common distinct reddish brown (5YR 5/4) clay films on faces of peds; few angular fragments of chert; very strongly acid.

Reaction is strongly acid to very strongly acid, except in areas where lime has been added. Depth to the fragipan ranges from 20 to 24 inches. Depth to bedrock is more than 5 feet.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It has few to common mottles in shades of brown and gray. Texture is silt loam.

The Bw horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4. It has few to many mottles in shades of brown and gray. Texture is silt loam or silty clay loam.

The E' part of the E'/Bx horizon has hue of 2.5Y or 10YR, value of 5 to 7, and chroma of 3 or less. Texture is silt or silt loam. The Bx part has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4. It has common to many mottles in shades of gray and brown. Texture is silty clay loam or silt loam.

The Btx horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4 or is an evenly mottled pattern in shades of brown, gray, or yellow. It has few to many mottles in shades of brown, red, and gray. Texture is silty clay loam or silt loam.

The 2Bt horizon has hue of 10YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. Some pedons have few to many mottles in shades of gray, brown, and yellow. Texture is silty clay loam, clay loam, or silty clay.

### Talbott Series

The Talbott series consists of moderately deep, well drained soils on rolling ridgetops and steep hillsides. The soils formed in residuum weathered from limestone. Slopes range from 5 to 35 percent.

Typical pedon of Talbott silt loam, 15 to 35 percent, rocky, about 4.1 miles northwest of Leatherwood, 1.4 miles north of the intersection of Beech Creek Road and Morrison Creek Road, 0.3 mile southeast of the intersection of Beech Creek Road and Crossno Cemetery Road, 200 feet west of Beech Creek Road, in a wooded area (atlas sheet 4, lat. 35 degrees 26 minutes 15

seconds N. and long. 87 degrees 53 minutes 44 seconds W.).

A—0 to 4 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; very friable; many fine and medium roots and few coarse roots; neutral; abrupt smooth boundary.

BE—4 to 8 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; many fine and medium roots and few coarse roots; moderately acid; clear smooth boundary.

Bt1—8 to 17 inches; reddish brown (5YR 4/4) clay; strong medium angular blocky structure parting to strong fine angular blocky; firm; common fine and medium roots and few coarse roots; common distinct dark reddish brown (5YR 3/4) clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt2—17 to 34 inches; reddish brown (5YR 4/6) clay; strong medium angular blocky structure parting to strong fine angular blocky; firm; common fine and medium roots and few coarse roots; common distinct reddish brown (5YR 4/4) clay films on faces of peds; few black stains; moderately acid; clear smooth boundary.

BC—34 to 38 inches; mottled yellowish brown (10YR 5/6), brownish yellow (10YR 6/8), and light brownish gray (10YR 6/2) clay; moderate medium angular blocky structure; firm; few fine and medium roots; slightly acid; clear smooth boundary.

R—38 inches; hard limestone bedrock.

Reaction is generally moderately acid to strongly acid; however, in areas near rock outcrops it ranges to neutral. The content of coarse fragments ranges from 0 to 20 percent in the A and E horizons and from 0 to 5 percent in the B horizon. Depth to hard limestone bedrock ranges from 20 to 40 inches.

The A horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam or silty clay loam.

The BE horizon, if it occurs, has hue of 10YR and 7.5YR, value of 4 to 6, and chroma 3 to 6. Texture of the fine-earth fraction is silt loam or silty clay loam.

The Bt horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. Texture is clay.

The BC horizon has hue of 10YR to 2.5YR, value of 4 to 6, and chroma of 4 to 8, or it has no dominant color and is an evenly mottled pattern in shades of brown, yellow, red, and gray. Texture is silty clay or clay.

### Wolftever Series

The Wolftever series consists of very deep, moderately well drained soils on low stream terraces. The soils formed in clayey alluvium. Slopes range from 0 to 5 percent.

Typical pedon of Wolftever silt loam, occasionally flooded, about 2.7 miles north of Clifton, 1.7 miles southwest of the intersection of Tennessee Highway 128 and Dan Richardson Road, 0.7 mile southwest of the intersection of Dan Richardson Road and Richardson Cemetery Road, 500 feet south of the end of Richardson Cemetery Road, in a cultivated field (atlas sheet 4, lat. 35 degrees 25 minutes 40 seconds N. and long. 87 degrees 59 minutes 42 seconds W.).

- Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; very friable; few fine roots; slightly acid; abrupt smooth boundary.
- Bt1—6 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; few faint dark yellowish brown (10YR 4/6) clay films on faces of peds; moderately acid; clear smooth boundary.
- Bt2—16 to 26 inches; yellowish brown (10YR 5/6) silty clay; few medium distinct light yellowish brown (10YR 6/4) mottles; moderate fine subangular blocky structure; firm; few very fine roots; few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; few black manganese concretions; strongly acid; clear wavy boundary.
- Bt3—26 to 36 inches; yellowish brown (10YR 5/4) silty clay; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; few

black manganese concretions; strongly acid; clear wavy boundary.

- Bt4—36 to 52 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; common black manganese concretions; strongly acid; clear wavy boundary.
- BC—52 to 60 inches; yellowish brown (10YR 5/4) silty clay loam; common coarse distinct light brownish gray (10YR 6/2) and common fine distinct light yellowish brown (10YR 6/4) mottles; weak medium and coarse subangular blocky structure; friable; common black manganese concretions; strongly acid.

Reaction is strongly or very strongly acid, except in areas where lime has been added. Depth to bedrock is more than 5 feet.

The Ap or A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. The lower part of the horizon has few to many mottles in shades of gray and brown. Texture is silty clay loam or silty clay.

The BC horizon has hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4, and few to many mottles in shades of gray or brown; or it has no dominant color and is an evenly mottled pattern in shades of brown and gray. Texture is silty clay loam, loam, or silt loam.



# Formation of the Soils

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The combined influence of the five factors of soil formation, which are parent material, time, climate, topography, and living organisms, determine the characteristics and properties of a soil.

## Parent Material

Parent material is the unconsolidated mass in which a soil forms. The character of this mass affects the kind of profile that develops and the degree of development.

The classes of parent material in Wayne County consist of mixtures of loess (windblown silt), residuum of limestone, tripolite, and siltstone, mixtures of gravelly and clayey marine sediments, colluvium, and recent and older alluvium. A silty mantle caps most of the uplands in the county. It ranges from two feet to only several inches in thickness. This silty material is the parent material in which the upper part of the Dickson, Mountview, Taft, and Guthrie soils formed. The lower part formed in fine-textured residuum derived from limestone. The Braxton soils formed in residuum derived from limestone and in colluvium. Mountview soils formed in a silty mantle and limestone residuum. The Biffle and Sulphura soils, which are on steep hillsides, formed in loamy material weathered from siltstone, tripolite, and limestone. They have less profile development than the Mountview soils. The Saffell soils formed in a mixture of gravelly deposits derived from loamy riverine and marine sediments. Several soils, such as the Armour, Pickwick, Wolftever, and Humphreys soils, developed on stream terraces. They formed in a mixture of silty material and older alluvium. Minvale soils are on foot slopes. They formed in colluvium. The least developed soils in the county formed in alluvium that was deposited by streams or washed from uplands. Lindell, Egam, Ennis, Pruitton, Bruno, Lee, Lobelville, and Riverby soils formed in recent alluvium.

## Time

The age of soils varies considerably, and the length of time that a soil has been forming is generally reflected in the profile development. Old soils generally have better defined horizons than young soils.

In Wayne County, the effects of time as a soil-forming factor are apparent. The Dickson, Mountview, and Ironcity soils dominate the undulating ridges. They have significant profile development. The steep hillsides are characterized by the slightly younger Biffle, Sulphura, and Sugargrove soils. Two ages of soils are evident in the Lax, Brandon, Silerton, and Saffell soils. These soils are influenced by a capping of windblown silt over and intermixed with clays, sands, and gravels of marine or river origin. The soils of intermediate age, such as Armour and Pickwick soils, formed in silty material deposited on stream terraces. The youngest soils are on flood plains. They formed in recent alluvium washed from streams and uplands. Bruno, Riverby, and Lee soils have not been in place long enough to develop distinct horizons and continue to acquire new material annually.

## Climate

Climate, as a factor of soil formation, affects the physical, chemical, and biological relationships in the soil, primarily through the influence of precipitation and temperature. These relationships exert much influence on the rates of soil weathering, erosion, and organic matter decomposition. The leaching of nutrients in a soil is related to the amount of rainfall and its movement through the soil. The effects of climate control the kinds of plants and animals that can thrive in an area. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in a soil.

Wayne County has a warm, humid climate characteristic of the climate of the southeastern part of the United States. The climate varies so little within the county that it has not caused differences in soils. The mild temperatures and abundant rainfall cause intense leaching of soluble and colloidal materials and a rapid decomposition of organic matter. As it moves downward in a soil, some of the translocated material accumulates in the lower layers and some moves out of the soil. Generally, the older, well developed soils in Wayne County are more weathered, leached, acid, and have low natural fertility.

## Topography

Topography, including relief, slope, landform, and aspect, influences or modifies the effects of the other soil-forming factors. The gradient, shape, and length of slopes directly influence the rates of infiltration and runoff. Areas that have a higher runoff rate are generally more eroded than other areas, assuming other factors are equal. The steeper slopes in many areas are a result of the rapid downcutting by stream action that exposed the parent material to soil-forming factors. The soils in these sloping areas have profiles that are undergoing development. They have not reached the maturity that soils on more stable landscapes have achieved. The soils in areas below steeper side slopes formed as a result of various types of mass wasting, such as creep, soil flow, and slump. These soils have loamy profiles and are of intermediate age. They formed from soils and parent material on adjacent landscapes. Concave slopes tend to concentrate water, and more water infiltrates the soils on gentler slopes. In many areas, free water moving downward through the soil profile is trapped or perched above a relatively impermeable fragipan layer, where it stands for days or weeks or in some places moves away laterally. Soils on flood plains are periodically covered with fresh sediment washed from the adjacent uplands or deposited by stream overflow. This repeated deposition results in stratified soils that have minimum profile development.

## Living Organisms

Plants and large and small animals are active forces in soil formation. Living organisms transfer soil material in many ways. When a tree falls, the roots bring soil to the surface. Ants and crayfish construct mounds that generally contain material from the subsoil. The moving animals and growing plants blend soil ingredients into a uniform mixture. The plant roots break up stratified sediments and dislodge rock fragments.

Microscopic organisms contribute to the chemical environment within the soil. They are essential for plant growth and survival. Old root holes provide channels for the movement of air and water. Decaying plants release nutrients and organic acids. Living roots absorb water and nutrients, increase carbon dioxide levels, lower oxygen levels, and increase acidity.

Living organisms also affect the color of soils. Well drained soils are red, yellow, and brown, and poorly drained soils are gray. Yellow and brown iron and manganese compounds coat mineral grains. When the soil is saturated and roots and microorganisms use oxygen faster than it can be replenished, some iron compounds dissolve and are translocated downward. Manganese compounds become indurated, and small nodules and concretions develop. The mineral grains turn gray as they lose their coatings, and gray mottles form at the depth of the seasonal high water table.

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# Glossary

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

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**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.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low .....	0 to 2
Low .....	2 to 4
Moderate .....	4 to 6
High .....	more than 6

**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.

**Bench terrace.** A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

**Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

**Bottom land.** The normal flood plain of a stream, subject to flooding.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**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.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**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.

**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.

**Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that 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.

**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.

**Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.

**Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period.

**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.

**Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

**Drainage class** (natural). Refers to the frequency and duration of 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."

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

**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.

**Eolian soil material.** Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

**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.

**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.

**Excess lime** (in tables). Excess carbonates in the soil that restrict the growth of some plants.

**Fast intake** (in tables). The rapid movement of water into the soil.

**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, tillage, and other growth factors are favorable.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity, or capillary capacity*.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**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.

**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.

**Foot slope.** 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.

**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.

**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.

**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.

**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.

- Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.
- Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.
- Infiltration 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.
- 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.
- Knoll.** A small, low, rounded hill rising above adjacent landforms.
- 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.
- 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.
- 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.
- Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.
- Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.
- Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.
- 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).
- Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- Nodules.** 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*.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedon.** The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The downward movement of water through the soil.

**Percs slowly** (in tables). The slow movement of water through the soil adversely affects the specified use.

**Permeability.** The quality of the soil that enables water 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.)

**Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plowpan.** A compacted layer formed in the soil directly below the plowed layer.

**Ponding.** Standing water on soils in closed depressions.

Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poor filter** (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

**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.

**Poor outlets** (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

**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

**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.

**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.

**Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

**Sedimentary rock.** 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.

**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.

**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.

**Slippage** (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for complex slopes are as follows:

Level .....	0 to 2 percent
Undulating .....	2 to 8 percent
Rolling .....	5 to 12 percent
Hilly .....	12 to 25 percent
Steep .....	25 to 60 percent
Very steep .....	60 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.

**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.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

- Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. 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.
- 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."
- Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- Toe slope.** The outermost inclined surface at the base of a hill; part of a foot slope.
- 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.
- Unstable fill (in tables).** Risk of caving or sloughing on banks of fill material.
- Upland.** Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.
- Valley fill.** In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.
- Variation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.
- 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 oven-dry 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

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TABLE 1.--TEMPERATURE AND PRECIPITATION  
(Recorded in the period 1961-90 at Waynesboro, Tennessee)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--		
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	46.4	22.6	34.5	71	-7	14	4.76	2.44	6.79	7	3.0
February----	51.5	25.5	38.5	77	2	27	4.70	2.92	6.30	7	1.1
March-----	61.4	34.4	47.9	83	12	103	6.28	3.63	8.64	8	.6
April-----	71.8	42.9	57.3	88	22	256	5.35	3.13	7.32	7	.0
May-----	78.4	51.2	64.8	91	31	460	5.62	3.37	7.63	7	.0
June-----	85.7	59.7	72.7	96	41	680	3.79	1.77	5.52	5	.0
July-----	89.2	64.2	76.7	100	49	827	5.19	3.28	6.92	7	.0
August-----	88.5	62.2	75.4	99	47	786	3.73	1.78	5.41	6	.0
September---	82.7	56.0	69.4	96	35	582	3.67	1.52	5.50	5	.0
October-----	72.6	42.1	57.3	88	23	257	3.65	2.21	5.17	5	.0
November----	61.6	34.5	48.0	81	12	94	5.58	3.38	7.56	7	.2
December----	50.7	27.1	38.9	73	2	29	5.74	3.17	8.01	8	1.1
Yearly:											
Average---	70.0	43.5	56.8	---	---	-----	-----	-----	-----	---	-----
Extreme---	105	-17	---	100	-7	-----	-----	-----	-----	---	-----
Total-----	---	---	---	---	---	4,115	58.05	49.12	65.54	79	6.0

\* 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 1961-90 at Waynesboro, 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. 13	Apr. 21	May 12
2 years in 10 later than--	Apr. 8	Apr. 16	May 6
5 years in 10 later than--	Mar. 30	Apr. 7	Apr. 25
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 21	Oct. 7	Sept. 26
2 years in 10 earlier than--	Oct. 27	Oct. 13	Oct. 1
5 years in 10 earlier than--	Nov. 8	Oct. 23	Oct. 11

TABLE 3.--GROWING SEASON

(Recorded in the period 1961-90 at Waynesboro, 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	199	181	142
8 years in 10	207	186	151
5 years in 10	222	197	166
2 years in 10	236	208	182
1 year in 10	244	213	191

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

Map symbol	Soil name	Acres	Percent
AmA	Armour silt loam, 0 to 2 percent slopes, occasionally flooded-----	2,990	0.6
AmB	Armour silt loam, gravelly substratum, 2 to 5 percent slopes-----	2,240	0.5
AsF	Ashwood - rock outcrop complex, 25 to 70 percent slopes-----	4,090	0.9
BfC	Biffle gravelly silt loam, 5 to 15 percent slopes-----	40,080	8.5
BfE	Biffle gravelly silt loam, 15 to 30 percent slopes-----	35,900	7.6
BfF	Biffle gravelly silt loam, 30 to 60 percent slopes-----	118,670	25.2
BnB	Brandon silt loam, 2 to 5 percent slopes-----	2,180	0.5
BnC	Brandon silt loam, 5 to 12 percent slopes-----	26,830	5.7
BnD	Brandon silt loam, 12 to 20 percent slopes-----	13,700	2.9
BrB	Braxton silt loam, 2 to 5 percent slopes-----	150	*
BrC	Braxton silt loam, 5 to 12 percent slopes-----	830	0.2
BrC3	Braxton silty clay loam, 5 to 12 percent slopes, severely eroded-----	430	0.1
BrD	Braxton silt loam, 12 to 20 percent slopes-----	330	0.1
BrD3	Braxton silty clay loam, 12 to 20 percent slopes, severely eroded-----	280	0.1
BsC	Braxton-Talbott complex, 5 to 15 percent slopes-----	2,160	0.5
BsE	Braxton-Talbott complex, 15 to 35 percent slopes-----	8,360	1.8
BtE	Braxton - talbott complex, 15 to 35 percent slopes, stony-----	2,260	0.5
BxC	Braxton-Talbott-Gullied land complex, 5 to 20 percent slopes-----	220	*
By	Bruno sandy loam, frequently flooded-----	190	*
DkB	Dickson silt loam, 2 to 5 percent slopes-----	2,170	0.5
DkC	Dickson silt loam, 5 to 8 percent slopes-----	810	0.2
Eg	Egam silty clay loam, occasionally flooded-----	100	*
En	Ennis gravelly silt loam, occasionally flooded-----	11,060	2.3
Gu	Guthrie silt loam, ponded-----	390	0.1
HuB	Humphreys gravelly silt loam, 2 to 5 percent slopes-----	7,250	1.5
HuC	Humphreys gravelly silt loam, 5 to 12 percent slopes-----	10,350	2.2
IrC	Ironcity gravelly silt loam, 5 to 12 percent slopes-----	17,010	3.6
IrD	Ironcity gravelly silt loam, 12 to 20 percent slopes-----	1,240	0.3
LaB	Lax silt loam, 2 to 5 percent slopes-----	9,270	2.0
LaC	Lax silt loam, 5 to 12 percent slopes-----	4,070	0.9
Le	Lee gravelly silt loam, occasionally flooded-----	3,750	0.8
Ln	Lindell silt loam, occasionally flooded-----	1,550	0.3
Lo	Lobelville gravelly silt loam, occasionally flooded-----	6,070	1.3
LuB	Luverne fine sandy loam, 2 to 5 percent slopes-----	1,130	0.2
LuC	Luverne fine sandy loam, 5 to 12 percent slopes-----	8,650	1.8
LuD	Luverne fine sandy loam, 12 to 20 percent slopes-----	3,670	0.8
MnD	Minvale gravelly silt loam, 12 to 20 percent slopes-----	4,360	0.9
MnE	Minvale gravelly silt loam, 20 to 30 percent slopes-----	550	0.1
MoB	Mountview silt loam, 2 to 5 percent slopes-----	900	0.2
MoB2	Mounview silt loam, 2 to 5 percent slopes, eroded-----	310	0.1
MoC	Mountview silt loam, 5 to 12 percent slopes-----	3,720	0.8
MoC2	Mountview silt loam, 5 to 12 percent slopes, eroded-----	820	0.2
PkB	Pickwick silt loam, 2 to 5 percent slopes-----	730	0.2
PkC	Pickwick silt loam, 5 to 12 percent slopes-----	1,660	0.4
PkC3	Pickwick silty clay loam, 5 to 12 percent slopes, severely eroded-----	530	0.1
PkD	Pickwick silt loam, 12 to 20 percent slopes-----	230	*
PkD3	Pickwick silty clay loam, 12 to 20 percent slopes, severely eroded-----	160	*
PM	Pits, mines-----	130	*
Pr	Pruittton silt loam, occasionally flooded-----	3,580	0.8
Rb	Riverby gravelly sandy loam, frequently flooded-----	10,550	2.2
RfD	Rock outcrop-Barfield complex, 10 to 30 percent slopes-----	1,050	0.2
SaD	Saffell gravelly fine sandy loam, 12 to 20 percent slopes-----	7,620	1.6
SaF	Saffell gravelly fine sandy loam, 20 to 60 percent slopes-----	29,830	6.4
SeB	Silerton silt loam, 2 to 5 percent slopes-----	4,850	1.0
SeB2	Silerton silt loam, 2 to 5 percent slopes, eroded-----	870	0.2
SeC	Silerton silt loam, 5 to 12 percent slopes-----	3,340	0.7
SeC2	Silerton silt loam, 5 to 12 percent slopes, eroded-----	1,000	0.2
SgC	Sugargrove channery silt loam, 5 to 12 percent slopes-----	1,920	0.4
SgD	Sugargrove channery silt loam, 12 to 20 percent slopes-----	1,720	0.4
SuF	Sulphura channery silt loam, 20 to 60 percent slopes-----	18,750	4.0
SxF	Sulphura-Rock outcrop complex, 30 to 75 percent slopes-----	12,610	2.7
Ta	Taft silt loam-----	770	0.2

See footnote at end of table.

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

Map symbol	Soil name	Acres	Percent
TbC	Talbott silt loam, 5 to 15 percent slopes, rocky-----	3,290	0.7
TbE	Talbott silt loam, 15 to 35 percent slopes, rocky-----	1,910	0.4
WfA	Wolftever silt loam, 0 to 2 percent slopes, occasionally flooded-----	940	0.2
WfB	Wolftever silt loam, 2 to 5 percent slopes, rarely flooded-----	370	0.1
	Water-----	1,200	0.2
	Total-----	470,700	100.0

\* Less than 0.1 percent.

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. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Cotton	Wheat	Tall fescue- ladino	Alfalfa hay
		<u>Bu</u>	<u>Bu</u>	<u>Lbs</u>	<u>Bu</u>	<u>AUM*</u>	<u>Tons</u>
AmA----- Armour	IIw	120	50	850	45	9.0	4.0
AmB----- Armour	IIe	115	45	800	50	8.5	4.0
AsF**----- Ashwood-Rock outcrop	VIIIs	---	---	---	---	---	---
BfC----- Biffle	IVs	---	---	---	---	4.5	---
BfE----- Biffle	VIIs	---	---	---	---	3.5	---
BfF----- Biffle	VIIIs	---	---	---	---	---	---
BnB----- Brandon	IIe	85	35	650	35	7.0	3.0
BnC----- Brandon	IIIe	75	30	500	30	6.5	2.0
BnD----- Brandon	IVe	65	25	---	30	5.0	---
BrB----- Braxton	IIe	85	35	800	47	7.0	3.5
BrC----- Braxton	IIIe	75	30	750	43	6.5	3.5
BrC3----- Braxton	IVe	55	20	600	32	5.5	2.0
BrD----- Braxton	IVe	65	25	---	37	6.0	3.0
BrD3----- Braxton	VIe	---	---	---	---	5.0	---
BsC----- Braxton-Talbott	IVe	---	---	---	---	6.0	---
BsE, BtE----- Braxton-Talbott	VIe	---	---	---	---	5.1	---
BxC**----- Braxton- Talbott- Gullied land	VIIe	---	---	---	---	---	---
By----- Bruno	IVs	---	30	---	---	4.5	---

See footnote at end of table.

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

Soil name and map symbol	Land capability	Corn	Soybeans	Cotton	Wheat	Tall fescue- ladino	Alfalfa hay
		Bu	Bu	Lbs	Bu	AUM*	Tons
DkB----- Dickson	IIe	90	35	700	50	7.0	---
DkC----- Dickson	IIIe	85	30	575	45	6.0	---
Eg----- Egam	IIw	85	40	750	45	7.5	---
En----- Ennis	IIw	70	25	600	50	6.5	---
Gu----- Guthrie	Vw	---	---	---	---	4.0	---
HuB----- Humphreys	IIe	90	35	600	50	6.5	3.5
HuC----- Humphreys	IIIe	80	32	550	48	6.0	3.0
IrC----- Ironcity	IIIe	85	30	550	45	7.0	3.5
IrD----- Ironcity	IVe	65	25	---	35	6.5	3.0
LaB----- Lax	IIe	85	30	675	40	7.0	---
LaC----- Lax	IIIe	75	25	600	35	6.5	---
Le----- Lee	IVw	50	25	425	---	6.5	---
Ln----- Lindell	IIw	115	40	800	50	9.0	---
Lo----- Lobelville	IIw	90	32	700	35	7.5	---
LuB----- Luverne	IIIe	75	40	700	35	6.5	3.0
LuC----- Luverne	IVe	65	25	---	30	6.0	2.0
LuD----- Luverne	VIIe	---	---	---	---	5.0	---
MnD----- Minvale	IVe	70	25	---	35	6.5	3.0
MnE----- Minvale	VIe	---	---	---	---	5.5	---
MoB----- Mountview	IIe	100	40	800	55	8.0	3.5

See footnote at end of table.

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

Soil name and map symbol	Land capability	Corn	Soybeans	Cotton	Wheat	Tall fescue- ladino	Alfalfa hay
		<u>Bu</u>	<u>Bu</u>	<u>Lbs</u>	<u>Bu</u>	<u>AUM*</u>	<u>Tons</u>
MoB2----- Mountview	IIe	95	35	700	50	8.0	3.5
MoC----- Mountview	IIIe	90	35	700	50	8.0	3.0
MoC2----- Mountview	IIIe	85	30	700	45	7.8	2.5
PkB----- Pickwick	IIe	100	40	800	55	8.0	3.5
PkC----- Pickwick	IIIe	95	36	725	50	8.0	3.0
PkC3----- Pickwick	IVe	65	25	600	40	7.0	2.5
PkD----- Pickwick	IVe	75	30	650	45	7.2	2.8
PkD3----- Pickwick	VIe	55	18	450	35	5.0	2.0
PM**. Pits and mines							
Pr----- Pruitton	IIw	110	35	750	45	8.0	---
Rb----- Riverby	IVs	---	---	---	---	3.5	---
RfD----- Rock outcrop- Barfield	VIIIs	---	---	---	---	4.0	---
SaD----- Saffell	VIIs	---	---	---	---	5.5	---
SaF----- Saffell	VIIIs	---	---	---	---	4.5	---
SeB----- Silerton	IIe	95	36	750	50	8.0	3.5
SeB2----- Silerton	IIe	90	35	725	48	7.8	3.5
SeC----- Silerton	IVe	75	28	500	45	5.0	2.8
SeC2----- Silerton	IVe	70	25	500	42	4.5	2.8
SgC----- Sugargrove	IIIe	80	25	450	35	5.5	---
SgD----- Sugargrove	IVe	65	20	425	30	5.0	---

See footnote at end of table.

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

Soil name and map symbol	Land capability	Corn	Soybeans	Cotton	Wheat	Tall fescue- ladino	Alfalfa hay
		<u>Bu</u>	<u>Bu</u>	<u>Lbs</u>	<u>Bu</u>	<u>AUM*</u>	<u>Tons</u>
SuF----- Sulphura	VIIIs	---	---	---	---	---	---
SxF**----- Sulphura-Rock outcrop	VIIIs	---	---	---	---	---	---
Ta----- Taft	IIIw	80	35	---	40	6.5	---
TbC----- Talbott	VIe	---	---	---	40	4.5	---
TbE----- Talbott	VIIe	---	---	---	---	4.0	---
WfA----- Wolftever	IIw	80	35	500	---	7.5	---
WfB----- Wolftever	IIe	75	30	500	40	7.5	---

\* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

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

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Plant competi-tion	Common trees	Site index	Volume*	
AmA----- Armour	Slight	Slight	Slight	Severe	White oak----- Yellow-poplar----- Loblolly pine-----	70 90 77	57 86 100	Yellow-poplar, hickory, loblolly pine, southern red oak, black walnut, eastern white pine, white oak.
AmB----- Armour	Slight	Slight	Slight	Moderate	Yellow-poplar----- American sycamore--- American elm-----	90 85 ---	86 86 ---	Yellow-poplar, loblolly pine, black walnut, white oak, southern red oak, eastern white pine, hickory.
AsF**: Ashwood-----  Rock outcrop.	Severe	Severe	Moderate	Moderate	Southern red oak--- Loblolly pine----- Eastern redcedar---	60 70 40	43 86 43	Virginia pine, white oak, chesnut oak, eastern redcedar, shortleaf pine.
BfC----- Biffle	Slight	Slight	Moderate	Moderate	Southern red oak--- Shortleaf pine----- Chestnut oak----- Northern red oak---	70 70 60 72	57 114 43 57	Eastern redcedar, white oak, mockernut hickory, chesnut oak, Virginia pine, shortleaf pine.
BfE----- Biffle	Moderate	Moderate	Moderate	Moderate	Southern red oak--- Shortleaf pine----- Chestnut oak----- Northern red oak---	55 65 50 55	43 100 29 43	Eastern redcedar, white oak, mockernut hickory, chesnut oak, Virginia pine, shortleaf pine.
BfF----- Biffle	Severe	Severe	Moderate	Moderate	Southern red oak--- Shortleaf pine----- Chestnut oak----- Northern red oak---	70 70 60 72	57 114 43 57	Eastern redcedar, white oak, mockernut hickory, chesnut oak, Virginia pine, shortleaf pine.
BnB, BnC----- Brandon	Slight	Slight	Slight	Moderate	Black oak----- White oak----- Hickory----- Scarlet oak----- Southern red oak--- Chestnut oak----- Yellow-poplar-----	70 61 --- 69 71 --- 80	57 43 --- 57 57 --- 72	Yellow-poplar, loblolly pine, shortleaf pine, southern red oak, white oak, chesnut oak.
BnD----- Brandon	Moderate	Moderate	Moderate	Slight	Black oak----- White oak----- Hickory----- Scarlet oak----- Southern red oak--- Chestnut oak----- Post oak-----	60 --- --- --- --- --- ---	43 --- --- --- --- --- ---	Loblolly pine, shortleaf pine, yellow-poplar, southern red oak, chesnut oak.
BrB, BrC----- Braxton	Slight	Slight	Slight	Moderate	Northern red oak--- Eastern redcedar--- Loblolly pine-----	70 50 80	57 57 114	Southern red oak, white oak, hickory, yellow- poplar, loblolly pine, shortleaf pine.

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume*	
BrC3----- Braxton	Slight	Slight	Moderate	Moderate	Loblolly pine----- Eastern redcedar----	70 45	86 57	Loblolly pine, southern red oak, white oak, hickory, yellow-poplar, shortleaf pine.
BrD----- Braxton	Moderate	Moderate	Moderate	Moderate	Loblolly pine----- Eastern redcedar----	70 45	86 57	Loblolly pine, southern red oak, white oak, hickory, yellow-poplar, shortleaf pine.
BrD3----- Braxton	Moderate	Moderate	Moderate	Moderate	Loblolly pine----- Eastern redcedar----	70 45	86 57	Loblolly pine, southern red oak, white oak, hickory, yellow-poplar, shortleaf pine.
BsC**: Braxton-----	Slight	Slight	Slight	Moderate	Northern red oak---- Eastern redcedar---- Loblolly pine-----	70 50 80	57 57 114	Southern red oak, white oak, hickory, yellow-poplar, loblolly pine, shortleaf pine.
Talbott-----	Slight	Slight	Slight	Moderate	Northern red oak---- Loblolly pine----- Shortleaf pine----- Eastern redcedar----	65 80 64 46	43 114 100 57	Loblolly pine, shortleaf pine, southern red oak, white oak, hickory, yellow-poplar.
BsE**: Braxton-----	Moderate	Moderate	Moderate	Moderate	Loblolly pine----- Eastern redcedar----	70 45	86 57	Loblolly pine, southern red oak, white oak, chesnut oak, hickory, yellow-poplar, shortleaf pine.
Talbott-----	Moderate	Moderate	Moderate	Moderate	Northern red oak---- Loblolly pine----- Shortleaf pine----- Eastern redcedar----	60 70 60 40	43 86 86 43	Loblolly pine, southern red oak, white oak, chesnut oak, hickory, yellow-poplar, shortleaf pine.
BtE**: Braxton-----	Moderate	Moderate	Slight	Moderate	Northern red oak---- Eastern redcedar---- Loblolly pine-----	70 50 80	57 57 114	Southern red oak, white oak, chesnut oak, hickory, yellow-poplar, loblolly pine, shortleaf pine.
Talbott-----	Moderate	Moderate	Slight	Moderate	Northern red oak---- Loblolly pine----- Shortleaf pine----- Eastern redcedar----	65 80 64 46	43 114 100 57	Loblolly pine, shortleaf pine, southern red oak, white oak, chesnut oak, hickory, yellow-poplar.
BxC**: Braxton-----	Slight	Slight	Moderate	Moderate	Loblolly pine----- Eastern redcedar----	70 45	86 57	White oak, chesnut oak, eastern redcedar, shortleaf pine, Virginia pine.
Talbott-----	Moderate	Moderate	Moderate	Moderate	Loblolly pine----- Virginia pine----- Eastern redcedar----	70 60 40	86 86 43	White oak, chesnut oak, Virginia pine, shortleaf pine, eastern redcedar.

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume*	
BxC**: Gullied land.								
By----- Bruno	Slight	Slight	Moderate	Moderate	Cherrybark oak-----	90	114	Cherrybark oak, Shumard oak, willow oak, sweetgum, yellow-poplar, American sycamore.
					Water oak-----	90	86	
					Sweetgum-----	94	114	
					Willow oak-----	90	86	
					River birch-----	---	---	
					Yellow-poplar-----	94	100	
					Loblolly pine-----	93	143	
					American sycamore---	100	129	
					Eastern cottonwood--	110	157	
					Black willow-----	---	---	
DkB, DkC----- Dickson	Slight	Slight	Slight	Moderate	Yellow-poplar-----	92	86	White oak, cherrybark oak, yellow-poplar, southern red oak.
					White oak-----	73	57	
					Loblolly pine-----	80	114	
					Shortleaf pine-----	70	114	
Eg----- Egam	Slight	Slight	Moderate	Severe	Yellow-poplar-----	100	114	Yellow-poplar, water oak, black walnut, loblolly pine.
					Loblolly pine-----	90	129	
					Southern red oak---	80	57	
					Water oak-----	90	86	
En----- Ennis	Slight	Slight	Moderate	Moderate	Yellow-poplar-----	100	114	Yellow-poplar, American sycamore, black walnut, sweetgum, cherrybark oak, loblolly pine.
					White oak-----	80	57	
					Loblolly pine-----	90	129	
Gu----- Guthrie	Slight	Severe	Severe	Severe	Sweetgum-----	90	100	Sweetgum, American sycamore, yellow-poplar, willow oak.
					Willow oak-----	85	86	
HuB, HuC----- Humphreys	Slight	Slight	Slight	Moderate	Yellow-poplar-----	100	114	Yellow-poplar, white oak, white ash, black walnut, hickory, sweetgum, loblolly pine.
					Northern red oak---	70	57	
					Shortleaf pine-----	70	114	
					Loblolly pine-----	90	129	
					Black walnut-----	---	---	
IrC----- Ironcity	Slight	Slight	Slight	Moderate	Southern red oak---	70	57	Loblolly pine, black walnut, white oak, shortleaf pine, southern red oak, hickory, chesnut oak.
					Chestnut oak-----	60	43	
					White oak-----	70	57	
					Hickory-----	---	---	
IrD----- Ironcity	Moderate	Moderate	Slight	Moderate	Southern red oak---	70	57	Loblolly pine, black walnut, white oak, southern red oak, shortleaf pine, hickory, chesnut oak.
					Chestnut oak-----	60	43	
					White oak-----	70	57	
					Hickory-----	---	---	
LaB----- Lax	Slight	Slight	Slight	Moderate	Southern red oak---	70	57	White oak, southern red oak, chestnut oak, hickory, eastern redcedar, Virginia pine.
					Loblolly pine-----	80	114	
LaC----- Lax	Moderate	Slight	Slight	Moderate	Southern red oak---	70	57	White oak, southern red oak, chestnut oak, hickory, eastern redcedar, Virginia pine.
					Loblolly pine-----	80	114	

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume*	
Le----- Lee	Slight	Moderate	Moderate	Severe	Yellow-poplar----- Sweetgum----- Loblolly pine----- Willow oak----- Water oak----- White oak-----	90 90 80 80 80 70	86 100 129 72 72 57	American sycamore, cherrybark oak, water oak, yellow-poplar, green ash, sweetgum.
Ln----- Lindell	Slight	Slight	Moderate	Severe	Yellow-poplar----- Northern red oak---- Loblolly pine----- Sweetgum-----	100 80 90 90	114 57 129 100	Yellow-poplar, black walnut, American sycamore, sweetgum, cherrybark oak.
Lo----- Lobelville	Slight	Slight	Slight	Moderate	Yellow-poplar----- Southern red oak---- Loblolly pine----- Black walnut----- White oak-----	94 76 90 70 70	100 57 129 57 57	Yellow-poplar, cherrybark oak, American sycamore, black walnut, sweetgum.
LuB, LuC----- Luverne	Slight	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine-----	81 73	114 114	Loblolly pine, white oak, mockernut hickory, chesnut oak, eastern redcedar.
LuD----- Luverne	Moderate	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine-----	81 73	114 114	Loblolly pine, white oak, mockernut hickory, chesnut oak, eastern redcedar.
MnD, MnE----- Minvale	Moderate	Moderate	Slight	Moderate	Yellow-poplar----- White oak----- Shortleaf pine----- Loblolly pine----- Virginia pine-----	90 70 70 80 70	86 57 114 114 114	Yellow-poplar, southern red oak, white oak, black walnut, hickory, loblolly pine, shortleaf pine.
MoB, MoB2----- Mountview	Slight	Slight	Slight	Moderate	Southern red oak---- Yellow-poplar----- Shortleaf pine-----	70 90 65	57 86 100	Yellow-poplar, white oak, southern red oak, hickory, loblolly pine, shortleaf pine.
MoC, MoC2----- Mountview	Moderate	Slight	Slight	Moderate	Southern red oak---- Yellow-poplar----- Shortleaf pine-----	70 90 65	57 86 100	Loblolly pine, shortleaf pine, yellow-poplar, white oak, southern red oak, hickory.
PkB----- Pickwick	Slight	Slight	Slight	Moderate	Southern red oak---- Yellow-poplar----- White oak----- Shortleaf pine----- Virginia pine----- Loblolly pine-----	70 95 73 70 70 80	57 100 57 114 114 114	Yellow-poplar, black walnut, white oak, loblolly pine, hickory, shortleaf pine, southern red oak.
PkC, PkC3----- Pickwick	Moderate	Slight	Slight	Moderate	Southern red oak---- Yellow-poplar----- White oak----- Shortleaf pine----- Virginia pine----- Loblolly pine-----	70 95 73 70 70 80	57 100 57 114 114 114	Yellow-poplar, black walnut, white oak, loblolly pine, hickory, shortleaf pine, southern red oak.

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume*	
PkD, PkD3----- Pickwick	Severe	Moderate	Slight	Moderate	Southern red oak----	70	57	Yellow-poplar, black walnut, white oak, loblolly pine, hickory, shortleaf pine, southern red oak.
					Yellow-poplar-----	95	100	
					White oak-----	73	57	
					Shortleaf pine-----	70	114	
					Virginia pine-----	70	114	
Loblolly pine-----	80	114						
Pr----- Pruitton	Slight	Slight	Slight	Severe	Yellow-poplar-----	100	114	Yellow-poplar, green ash, American sycamore, black walnut, sweetgum, cherrybark oak.
					White oak-----	80	57	
					Loblolly pine-----	90	129	
					Shortleaf pine-----	80	129	
Rb----- Riverby	Slight	Slight	Severe	Moderate	Sweetgum-----	90	100	Yellow-poplar, American sycamore, sweetgum.
					American sycamore---	98	114	
					Hackberry-----	---	---	
RfD**: Rock outcrop.								
Barfield-----	Moderate	Moderate	Moderate	Moderate	Eastern redcedar----	40	43	Eastern redcedar, Virginia pine, white oak, chesnut oak, shortleaf pine.
SaD----- Saffell	Moderate	Moderate	Slight	Moderate	Loblolly pine-----	68	86	White oak, chesnut oak, Virginia pine, mockernut hickory, eastern redcedar.
					Shortleaf pine-----	60	86	
					White oak-----	---	---	
SaF----- Saffell	Severe	Severe	Slight	Moderate	Loblolly pine-----	68	86	White oak, chesnut oak, Virginia pine, mockernut hickory, eastern redcedar.
					Shortleaf pine-----	60	86	
					White oak-----	---	---	
SeB, SeB2----- Silerton	Slight	Slight	Slight	Moderate	Southern red oak----	70	57	Yellow-poplar, southern red oak, loblolly pine, black walnut, white oak, mockernut hickory.
					Yellow-poplar-----	90	86	
					White oak-----	70	57	
					Loblolly pine-----	80	114	
SeC, SeC2----- Silerton	Moderate	Slight	Slight	Moderate	Southern red oak----	70	57	Yellow-poplar, black walnut, white oak, mockernut hickory, southern red oak, loblolly pine.
					Yellow-poplar-----	90	86	
					White oak-----	70	57	
					Loblolly pine-----	80	114	
SgC----- Sugargrove	Slight	Slight	Slight	Moderate	Southern red oak----	60	43	Eastern redcedar, white oak, mockernut hickory, chesnut oak, Virginia pine.
					Shortleaf pine-----	60	86	
					Virginia pine-----	60	86	
SgD----- Sugargrove	Moderate	Moderate	Slight	Moderate	Southern red oak----	60	43	Eastern redcedar, white oak, mockernut hickory, chesnut oak, Virginia pine.
					Shortleaf pine-----	60	86	
					Virginia pine-----	60	86	
SuF----- Sulphura	Severe	Severe	Moderate	Moderate	Loblolly pine-----	65	86	Eastern redcedar, white oak, mockernut hickory, chesnut oak, Virginia pine.
					Shortleaf pine-----	55	72	
					Eastern redcedar----	35	29	

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Plant competi-tion	Common trees	Site index	Volume*	
SxF**: Sulphura-----	Severe	Severe	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- Eastern redcedar----	65 55 35	86 72 29	Eastern redcedar, Virginia pine.
Rock outcrop. Ta----- Taft	Slight	Moderate	Moderate	Severe	Yellow-poplar----- White oak----- Loblolly pine----- Sweetgum----- Shortleaf pine-----	90 60 85 80 60	86 43 114 86 86	Swamp white oak, cherrybark oak, sweetgum, American sycamore, green ash, pin oak, yellow-poplar.
TbC----- Talbott	Slight	Moderate	Slight	Moderate	Northern red oak---- Loblolly pine----- Shortleaf pine----- Eastern redcedar----	65 80 64 46	43 114 100 57	Loblolly pine, southern red oak, shortleaf pine, white oak, hickory, yellow-poplar.
TbE----- Talbott	Moderate	Moderate	Slight	Moderate	Northern red oak---- Loblolly pine----- Shortleaf pine----- Eastern redcedar----	65 80 64 46	43 114 100 57	Loblolly pine, southern red oak, shortleaf pine, white oak, hickory, yellow-poplar.
WfA, WfB----- Wolftever	Slight	Slight	Moderate	Moderate	Yellow-poplar----- White oak----- Southern red oak---- Willow oak----- Sweetgum----- Loblolly pine-----	90 70 70 80 80 80	86 57 57 72 86 114	Yellow-poplar, black walnut, sweetgum, swamp white oak, cherrybark oak, American sycamore, green ash.

\* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

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

TABLE 7.--RECREATIONAL DEVELOPMENT

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

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AmA----- Armour	Severe: flooding.	Slight-----	Moderate: small stones, flooding.	Slight-----	Moderate: flooding.
AmB----- Armour	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
AsF*: Ashwood-----  Rock outcrop.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BfC----- Biffle	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight-----	Severe: small stones.
BfE----- Biffle	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope.	Severe: small stones, slope.
BfF----- Biffle	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, slope.
BnB----- Brandon	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
BnC----- Brandon	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
BnD----- Brandon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
BrB----- Braxton	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight-----	Slight.
BrC, BrC3----- Braxton	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
BrD, BrD3----- Braxton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
BsC*: Braxton-----	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: slope, small stones.	Slight-----	Moderate: small stones, slope.
Talbott-----	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: slope, small stones.	Slight-----	Moderate: small stones, slope, depth to rock.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BsE*: Braxton-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Talbott-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
BtE*: Braxton-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Talbott-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
BxC*: Braxton-----	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
Talbott-----	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope, depth to rock.
Gullied land.					
By----- Bruno	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
DkB----- Dickson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Slight.
DkC----- Dickson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
Eg----- Egam	Severe: flooding.	Moderate: percs slowly.	Moderate: flooding, percs slowly.	Slight-----	Moderate: flooding.
En----- Ennis	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones, droughty, flooding.
Gu----- Guthrie	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
HuB----- Humphreys	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones, droughty.
HuC----- Humphreys	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, droughty.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
IrC----- Ironcity	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, large stones, slope.
IrD----- Ironcity	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
LaB----- Lax	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Severe: erodes easily.	Moderate: wetness.
LaC----- Lax	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
Le----- Lee	Severe: flooding, wetness.	Severe: wetness.	Severe: small stones, wetness.	Moderate: wetness.	Poor: wetness.
Ln----- Lindell	Severe: flooding.	Moderate: wetness.	Moderate: small stones, wetness, flooding.	Slight-----	Moderate: flooding.
Lo----- Lobelville	Severe: flooding.	Moderate: wetness, small stones.	Severe: small stones.	Slight-----	Moderate: small stones, flooding.
LuB----- Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight-----	Slight.
LuC----- Luverne	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
LuD----- Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MnD----- Minvale	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
MnE----- Minvale	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
MoB, MoB2----- Mountview	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
MoC, MoC2----- Mountview	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
PkB----- Pickwick	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PkC, PkC3----- Pickwick	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
PkD, PkD3----- Pickwick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
PM*. Pits and mines					
Pr----- Pruitton	Severe: flooding.	Slight-----	Moderate: small stones, flooding.	Severe: erodes easily.	Moderate: flooding.
Rb----- Riverby	Severe: flooding, small stones.	Severe: small stones.	Severe: small stones, flooding.	Moderate: flooding.	Severe: small stones, droughty, flooding.
RfD*: Rock outcrop.					
Barfield-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, depth to rock.
SaD----- Saffell	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
SaF----- Saffell	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
SeB, SeB2----- Silerton	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
SeC, SeC2----- Silerton	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
SgC----- Sugargrove	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, slope.
SgD----- 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.
SxF*: Sulphura-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Rock outcrop.					

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ta----- Taft	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
TbC----- Talbott	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope, depth to rock.
TbE----- Talbott	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
WfA----- Wolftever	Severe: flooding.	Moderate: percs slowly.	Moderate: flooding, percs slowly.	Slight-----	Moderate: flooding.
WfB----- Wolftever	Severe: flooding.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight-----	Slight.

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

TABLE 8.--WILDLIFE HABITAT

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

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild 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
AmA----- Armour	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
AmB----- Armour	Good	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
AsF*: Ashwood-----  Rock outcrop.	Very poor.	Fair	Poor	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.
BfC----- Biffle	Fair	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.
BfE----- Biffle	Poor	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.
BfF----- Biffle	Very poor.	Poor	Poor	Fair	Fair	---	Very poor.	Very poor.	Poor	Poor	Very poor.
BnB----- Brandon	Good	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
BnC----- Brandon	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
BnD----- Brandon	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
BrB, BrC, BrC3----- Braxton	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BrD, BrD3----- Braxton	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BsC*: Braxton-----	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Talbott-----	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
BsE*, BtE*: Braxton-----	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Talbott-----	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
BxC*: Braxton-----	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Talbott-----	Fair	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
BxC*: Gullied land.											
By----- Bruno	Poor	Poor	Fair	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
DkB----- Dickson	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DkC----- Dickson	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Eg----- Egam	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
En----- Ennis	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
Gu----- Guthrie	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	---	Good	Good	Very poor.	Very poor.	Good.
HuB----- Humphreys	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HuC----- Humphreys	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
IrC----- Ironcity	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
IrD----- Ironcity	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
LaB----- Lax	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LaC----- Lax	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Le----- Lee	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Ln----- Lindell	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Lo----- Lobelville	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
LuB----- Luverne	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
LuC----- Luverne	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
LuD----- Luverne	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
MnD----- Minvale	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
MnE----- Minvale	Very poor.	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MoB, MoB2----- Mountview	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Poor.
MoC, MoC2----- Mountview	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Poor.
PkB----- Pickwick	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PkC, PkC3----- Pickwick	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PkD, PkD3----- Pickwick	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PM*. Pits and mines											
Pr----- Pruittton	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Rb----- Riverby	Poor	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
RfD*: Rock outcrop.											
Barfield-----	Poor	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
SaD----- Saffell	Poor	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.
SaF----- Saffell	Very poor.	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.
SeB, SeB2----- Silterton	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SeC, SeC2----- Silterton	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SgC----- Sugargrove	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
SgD----- 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.
SxF*: Sulphura-----	Very poor.	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
Ta----- Taft	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
TbC----- Talbot	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TbE----- Talbot	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
WfA, WfB----- Wolftever	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

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

TABLE 9.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AmA----- Armour	Moderate: too clayey, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: flooding.
AmB----- Armour	Slight-----	Slight-----	Slight-----	Slight-----	Severe: low strength.	Slight.
AsF*: Ashwood-----	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Rock outcrop.						
BfC----- Biffle	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Severe: small stones.
BfE, BfF----- Biffle	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
BnB----- Brandon	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: low strength.	Slight.
BnC----- Brandon	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
BnD----- Brandon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BrB----- Braxton	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
BrC, BrC3----- Braxton	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
BrD, BrD3----- Braxton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
BsC*: Braxton-----	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: small stones, slope.
Talbott-----	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Moderate: small stones, slope, depth to rock.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BsE*, BtE*: Braxton-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Talbott-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
BxC*: Braxton-----	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
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.
Gullied land.						
By----- Bruno	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
DkB----- Dickson	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
DkC----- Dickson	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Slight.
Eg----- Egam	Moderate: too clayey, wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: flooding.
En----- Ennis	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: small stones, droughty, flooding.
Gu----- Guthrie	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.	Severe: ponding.
HuB----- Humphreys	Moderate: wetness.	Slight-----	Moderate: wetness.	Slight-----	Slight-----	Moderate: small stones, droughty.
HuC----- Humphreys	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty.
IrC----- Ironcity	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: small stones, large stones, slope.
IrD----- Ironcity	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
LaB----- Lax	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
LaC----- Lax	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
Le----- Lee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Ln----- Lindell	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Lo----- Lobelville	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: small stones, flooding.
LuB----- Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
LuC----- Luverne	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
LuD----- Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
MnD, MnE----- Minvale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MoB, MoB2----- Mountview	Moderate: too clayey.	Slight-----	Moderate: shrink-swell.	Slight-----	Severe: low strength.	Slight.
MoC, MoC2----- Mountview	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
PkB----- Pickwick	Slight-----	Slight-----	Slight-----	Slight-----	Severe: low strength.	Slight.
PkC, PkC3----- Pickwick	Moderate: slope.	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: low strength.	Moderate: slope.
PkD, PkD3----- Pickwick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
PM*. Pits and mines						
Pr----- Pruittton	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Rb----- Riverby	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: small stones, droughty, flooding.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
RfD*: Rock outcrop.						
Barfield-----	Severe: depth to rock, slope.	Severe: shrink-swell, slope, depth to rock.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, depth to rock.	Severe: depth to rock, shrink-swell, low strength.	Severe: slope, depth to rock.
SaD, SaF----- Saffell	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SeB, SeB2----- Silerton	Moderate: too clayey.	Slight-----	Moderate: shrink-swell.	Slight-----	Severe: low strength.	Slight.
SeC, SeC2----- Silerton	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
SgC----- Sugargrove	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, slope.
SgD----- Sugargrove	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SuF----- Sulphura	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
SxF*: Sulphura-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
Ta----- Taft	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
TbC----- Talbot	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.
TbE----- Talbot	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
WfA----- Wolftever	Moderate: too clayey, wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: flooding.
WfB----- Wolftever	Moderate: too clayey, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.

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

TABLE 10.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AmA----- Armour	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: too clayey, thin layer.
AmB----- Armour	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight-----	Fair: too clayey.
AsF*: Ashwood-----  Rock outcrop.	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
BfC----- Biffle	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
BfE, BfF----- Biffle	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
BnB----- Brandon	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
BnC----- Brandon	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
BnD----- Brandon	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
BrB----- Braxton	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
BrC, BrC3----- Braxton	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
BrD, BrD3----- Braxton	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
BsC*: Braxton-----	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BsC*: Talbott-----	Severe: depth to rock, percs slowly.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
BsE*, BtE*: Braxton-----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Talbott-----	Severe: depth to rock, percs slowly, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
BxC*: Braxton-----	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Talbott-----	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
Gullied land.					
By----- Bruno	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
DkB, DkC----- Dickson	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Eg----- Egam	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
En----- Ennis	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Fair: small stones.
Gu----- Guthrie	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
HuB----- Humphreys	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness.	Severe: seepage.	Poor: small stones.
HuC----- Humphreys	Moderate: wetness, slope.	Severe: seepage, slope.	Severe: seepage, wetness.	Severe: seepage.	Poor: small stones.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
IrC----- Ironcity	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: small stones.
IrD----- Ironcity	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
LaB----- Lax	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack, small stones.
LaC----- Lax	Severe: wetness, percs slowly.	Severe: seepage, slope, wetness.	Severe: seepage, wetness, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack, small stones.
Le----- Lee	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: small stones, wetness.
Ln----- Lindell	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, small stones, wetness.
Lo----- Lobelville	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: too clayey, small stones, wetness.
LuB----- Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
LuC----- Luverne	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
LuD----- Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
MnD, MnE----- Minvale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
MoB, MoB2----- Mountview	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack, small stones.
MoC, MoC2----- Mountview	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack, small stones.
PkB----- Pickwick	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PkC, PkC3----- Pickwick	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.
PkD, PkD3----- Pickwick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PM*. Pits and mines					
Pr----- Pruitton	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Good.
Rb----- Riverby	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, small stones.
RfD*: Rock outcrop.					
Barfield-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
SaD, SaF----- Saffell	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: small stones, slope.
SeB, SeB2----- Sileron	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
SeC, SeC2----- Sileron	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
SgC----- Sugargrove	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Poor: small stones.
SgD----- Sugargrove	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
SuF----- Sulphura	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
SxF*: Sulphura-----	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ta----- Taft	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
TbC----- Talbot	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
TbE----- Talbot	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
WfA----- Wolftever	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
WfB----- Wolftever	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.

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

TABLE 11.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AmA----- Armour	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
AmB----- Armour	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
AsF*: Ashwood-----	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Rock outcrop.				
BfC----- Biffle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
BfE----- Biffle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BfF----- Biffle	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BnB, BnC----- Brandon	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
BnD----- Brandon	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
BrB, BrC, BrC3----- Braxton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
BrD, BrD3----- Braxton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
BsC*: Braxton-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Talbott-----	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BsE*: Braxton-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
Talbott-----	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
BtE*: Braxton-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
Talbott-----	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
BxC*: Braxton-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Talbott-----	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Gullied land.				
By----- Bruno	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
DkB, DkC----- Dickson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Eg----- Egam	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
En----- Ennis	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Gu----- Guthrie	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
HuB, HuC----- Humphreys	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
IrC----- Ironcity	Fair: low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
IrD----- Ironcity	Fair: low strength, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
LaB, LaC----- Lax	Fair: shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Le----- Lee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
Ln----- Lindell	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Lo----- Lobelville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
LuB, LuC----- Luverne	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LuD----- Luverne	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
MnD----- Minvale	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
MnE----- Minvale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
MoB, MoB2, MoC, MoC2-- Mountview	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
PkB----- Pickwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PkC, PkC3----- Pickwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
PkD, PkD3----- Pickwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
PM*. Pits and mines				
Pr----- Pruitton	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Rb----- Riverby	Fair: large stones.	Probable-----	Probable-----	Poor: small stones, area reclaim.
RfD*: Rock outcrop.				
Barfield-----	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, small stones.
SaD----- Saffell	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
SaF----- Saffell	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
SeB, SeB2, SeC, SeC2-- Silerton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim, small stones.
SgC----- Sugargrove	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
SgD----- Sugargrove	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
SuF----- Sulphura	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
SxF*: Sulphura-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
Ta----- Taft	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
TbC----- Talbott	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
TbE----- Talbott	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
WfA, WfB----- Wolftever	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.

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

TABLE 12.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AmA----- Armour	Moderate: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
AmB----- Armour	Severe: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
AsF*: Ashwood-----  Rock outcrop.	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
BfC, BfE, BfF----- Biffle	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.	Slope, droughty, depth to rock.
BnB----- Brandon	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
BnC, BnD----- Brandon	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
BrB----- Braxton	Moderate: seepage, slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
BrC, BrC3, BrD, BrD3----- Braxton	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
BsC*, BsE*, BtE*: Braxton-----	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
Talbott-----	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
BxC*:							
Braxton-----	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
Talbott-----	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
Gullied land.							
By----- Bruno	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty-----	Too sandy-----	Droughty.
DkB, DkC----- Dickson	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
Eg----- Egam	Slight-----	Moderate: thin layer, hard to pack, wetness.	Severe: slow refill.	Flooding-----	Wetness, flooding.	Wetness-----	Favorable.
En----- Ennis	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Droughty, flooding.	Favorable-----	Favorable.
Gu----- Guthrie	Slight-----	Severe: piping, ponding.	Severe: no water.	Ponding, percs slowly.	Ponding, percs slowly, rooting depth.	Erodes easily, ponding, rooting depth.	Wetness, erodes easily, rooting depth.
HuB----- Humphreys	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty.	Favorable-----	Droughty.
HuC----- Humphreys	Severe: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope-----	Slope, droughty.
IrC, IrD----- Ironcity	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
LaB----- Lax	Severe: seepage.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
LaC----- Lax	Severe: seepage, slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Le----- Lee	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-----	Wetness, droughty, flooding.	Wetness-----	Wetness, droughty.
Ln----- Lindell	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Flooding-----	Wetness, flooding.	Wetness-----	Favorable.
Lo----- Lobelville	Severe: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Flooding-----	Wetness, flooding.	Wetness-----	Favorable.
LuB----- Luverne	Moderate: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
LuC, LuD----- Luverne	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
MnD----- Minvale	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
MnE----- Minvale	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
MoB, MoB2----- Mountview	Moderate: seepage, slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
MoC, MoC2----- Mountview	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
PkB----- Pickwick	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
PkC, PkC3, PkD, PkD3----- Pickwick	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PM*. Pits and mines							
Pr----- Pruitton	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
Rb----- Riverby	Severe: seepage.	Severe: seepage, large stones.	Severe: cutbanks cave.	Deep to water	Large stones, droughty.	Large stones, too sandy.	Large stones, droughty.
RfD*: Rock outcrop.							
Barfield-----	Severe: depth to rock, slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, droughty.	Slope, depth to rock.	Slope, droughty, depth to rock.
SaD, SaF----- Saffell	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, soil blowing.	Slope, droughty.
SeB, SeB2----- Silerton	Moderate: seepage, slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
SeC, SeC2----- Silerton	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
SgC, SgD----- Sugargrove	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
SuF----- Sulphura	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
SxF*: Sulphura-----	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ta----- Taft	Moderate: seepage.	Severe: piping.	Severe: no water.	Percs slowly---	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
TbC, TbE----- Talbott	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
WfA----- Wolftever	Slight-----	Severe: hard to pack.	Severe: slow refill.	Flooding-----	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
WfB----- Wolftever	Moderate: slope.	Severe: hard to pack.	Severe: slow refill.	Slope-----	Wetness, slope, erodes easily.	Erodes easily, wetness.	Erodes easily.

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

TABLE 13.--ENGINEERING INDEX PROPERTIES

(The symbol &lt; means less than; &gt; means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AmA----- Armour	0-10	Silt loam-----	CL-ML, CL, ML	A-4	0	90-100	80-100	75-95	70-90	25-35	5-10
	10-43	Silty clay loam, silt loam.	CL	A-4, A-6	0	90-100	80-100	75-95	70-95	30-40	8-18
	43-60	Silty clay loam, silty clay, clay.	ML, MH, GM, SM	A-4, A-6, A-7	0-3	60-100	50-95	45-90	40-85	35-53	9-23
AmB----- Armour	0-6	Silt loam-----	CL-ML, CL, ML	A-4	0	95-100	90-100	85-100	80-95	25-35	5-10
	6-41	Silt loam, silty clay loam.	CL	A-4, A-6	0	95-100	90-100	85-100	85-100	28-40	8-18
	41-60	Gravelly silt loam, gravelly sandy loam, very gravelly silty clay loam.	ML, CL-ML, GM, GM-GC	A-2, A-4, A-6	0-5	50-80	50-80	40-70	20-65	<30	NP-12
AsF*: Ashwood-----	0-11	Silt loam-----	CL, CL-ML	A-4, A-6, A-7	0-15	95-100	90-100	85-100	70-95	25-49	6-22
	11-25 25	Clay, silty clay Unweathered bedrock.	MH ---	A-7 ---	0-15 ---	95-100 ---	90-100 ---	85-100 ---	75-95 ---	51-75 ---	20-40 ---
Rock outcrop.											
BfC, BfE, BfF---- Biffle	0-10	Gravelly silt loam.	GM-GC, CL-ML, CL, GC	A-2, A-4, A-1	0-5	50-90	40-80	37-70	20-60	20-28	3-9
	10-32	Gravelly silt loam, gravelly silty clay loam.	GC, GM-GC, CL-ML, CL	A-4, A-6	0-5	50-75	50-75	40-70	36-65	20-32	5-12
	32-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
BnB, BnC, BnD---- Brandon	0-6	Silt loam-----	ML, CL, CL-ML	A-4	0	100	95-100	90-100	85-100	<30	NP-10
	6-24	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	95-100	90-100	85-100	75-100	35-48	15-25
	24-60	Very gravelly fine sandy loam, very gravelly silt loam, gravelly clay loam.	SC, GC, GM-GC, SC-SM	A-2, A-4, A-1, A-6	0-5	30-70	20-60	15-55	10-50	10-38	5-20
BrB, BrC----- Braxton	0-5	Silt loam-----	CL	A-4, A-6	0	80-100	75-100	70-90	65-85	25-40	7-18
	5-12	Clay, silty clay	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-62	20-32
	12-60	Clay-----	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-65	22-34
BrC3----- Braxton	0-5	Silty clay loam	CL	A-4, A-6	0	80-100	75-100	70-90	65-85	25-40	7-18
	5-12	Clay, silty clay	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-62	20-32
	12-60	Clay-----	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-65	22-34
BrD----- Braxton	0-5	Silt loam-----	CL	A-4, A-6	0	80-100	75-100	70-90	65-85	25-40	7-18
	5-12	Clay, silty clay	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-62	20-32
	12-60	Clay-----	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-65	22-34

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BrD3----- Braxton	0-5	Silty clay loam	CL	A-4, A-6	0	80-100	75-100	70-90	65-85	25-40	7-18
	5-12	Clay, silty clay	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-62	20-32
	12-60	Clay-----	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-65	22-34
BsC*, BsE*, BtE*: Braxton-----	0-10	Gravelly silt loam.	CL, GC	A-4, A-6	0-2	60-80	50-75	45-65	40-55	25-40	7-18
	10-32	Clay, silty clay	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-62	20-32
	32-60	Clay-----	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-65	22-34
Talbott-----	0-5	Gravelly silt loam.	CL-ML, CL, GM-GC, ML	A-4	0-5	65-80	60-75	55-70	40-60	18-30	3-10
	5-38 38	Silty clay, clay Unweathered bedrock.	CH, CL, MH ---	A-7 ---	0-5 ---	95-100 ---	90-100 ---	80-100 ---	75-95 ---	41-80 ---	20-45 ---
BxC*: Braxton-----	0-3	Silty clay loam	CL	A-4, A-6	0	80-100	75-100	70-90	65-85	25-40	7-18
	3-12	Clay, silty clay	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-62	20-32
	12-60	Clay-----	CL, CH	A-7	0	80-100	75-100	65-95	60-90	45-65	22-34
Talbott-----	0-3	Silty clay loam	CL, CH	A-6, A-7	0-5	95-100	90-100	85-95	80-95	35-60	12-32
	3-38 38	Clay, silty clay Unweathered bedrock.	CL, CH ---	A-7 ---	0-10 ---	95-100 ---	90-100 ---	85-95 ---	80-95 ---	41-80 ---	20-45 ---
Gullied land.											
By----- Bruno	0-12	Sandy loam-----	SM, ML	A-4, A-2	0	100	100	60-85	30-60	<25	NP-3
	12-49	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2	0	100	100	60-80	10-30	---	NP
	49-60	Sand-----	SP-SM, SM	A-2, A-3	0	100	100	50-70	5-20	---	NP
DkB, DkC----- Dickson	0-11	Silt loam-----	CL-ML, ML	A-4	0	100	95-100	90-100	75-95	20-28	2-7
	11-22	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	95-100	85-95	25-38	5-17
	22-33	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	95-100	90-100	85-100	80-95	25-42	7-20
	33-60	Clay, gravelly silty clay loam, gravelly clay.	MH, ML, GC, CL	A-6, A-7	0-20	70-100	60-100	55-100	45-95	35-65	12-30
Eg----- Egam	0-9	Silty clay loam	CL, ML, CL-ML	A-6, A-7, A-4	0	95-100	95-100	85-100	75-95	21-45	4-20
	9-48	Silty clay, silty clay loam, clay.	CL, CH	A-7, A-6	0	95-100	95-100	90-100	85-95	38-60	15-30
	48-60	Silty clay loam, clay, clay loam.	CL, ML, CH	A-4, A-6, A-7	0	95-100	95-100	90-100	70-95	25-60	8-30
En----- Ennis	0-7	Gravelly silt loam.	CL-ML, ML, SM, GM	A-4, A-6	0-5	55-85	50-85	40-80	35-70	<30	NP-12
	7-60	Gravelly silt loam, gravelly loam, gravelly clay loam.	ML, SM, GM, CL-ML	A-4, A-6, A-2	0-5	55-95	40-85	40-80	30-70	<35	NP-15
Gu----- Guthrie	0-10	Silt loam-----	ML, CL-ML	A-4	0	100	100	90-100	85-95	18-28	2-7
	10-31	Silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	85-95	23-39	5-15
	31-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	90-100	85-100	80-100	70-95	20-42	5-20

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
HuB, HuC----- Humphreys	0-10	Gravelly silt loam.	ML, CL-ML, CL, GM-GC	A-4	0-5	60-75	55-75	50-70	35-55	18-28	3-10
	10-43	Gravelly silty clay loam, gravelly clay loam, gravelly silt loam.	CL, GC, SC	A-6	0-5	55-75	50-75	45-70	40-60	28-40	10-16
	43-60	Gravelly silty clay loam, gravelly clay loam, very gravelly clay loam.	CL, GC, SC	A-4, A-6, A-2	0-10	45-75	40-75	30-65	20-55	25-35	8-15
IrC, IrD----- Ironcity	0-7	Gravelly silt loam.	ML, CL, CL-ML, GM-GC	A-4	0-10	60-90	55-80	45-70	45-70	25-35	4-10
	7-36	Gravelly silt loam, gravelly silty clay loam.	CL, SC-SM, GC, CL-ML	A-4, A-6	0-15	60-90	55-80	55-80	45-80	25-40	5-20
	36-60	Gravelly silty clay, very gravelly silty clay, gravelly clay.	GC, CH, SC, CL	A-7	0-20	50-90	40-75	35-70	35-70	45-70	20-40
LaB----- Lax	0-13	Silt loam-----	ML, CL-ML, CL	A-4	0	80-100	75-100	70-95	55-85	15-30	3-10
	13-27	Silt loam, silty clay loam.	CL	A-4, A-6	0	80-100	75-100	70-95	60-95	25-40	8-16
	27-49	Gravelly silty clay loam, very gravelly silt loam, extremely gravelly silty clay loam.	GC	A-2	0-20	30-50	25-50	20-45	15-30	25-40	8-18
	49-60	Very gravelly silty clay, very gravelly clay, extremely gravelly silty clay.	CL, CH, GC, SC	A-2, A-6, A-7	0-20	30-75	25-75	20-70	15-60	35-55	15-30
LaC----- Lax	0-5	Silt loam-----	ML, CL-ML, CL	A-4	0	80-100	75-100	70-95	55-85	15-30	3-10
	5-27	Silt loam, silty clay loam.	CL	A-4, A-6	0	80-100	75-100	70-95	60-95	25-40	8-16
	27-49	Gravelly silty clay loam, very gravelly silt loam, extremely gravelly silty clay loam.	GC	A-2	0-20	30-50	25-50	20-45	15-30	25-40	8-18
	49-60	Very gravelly silty clay, very gravelly clay, extremely gravelly silty clay.	CL, CH, GC, SC	A-2, A-6, A-7	0-20	30-75	25-75	20-70	15-60	35-55	15-30

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Le----- Lee	0-7	Gravelly silt loam.	CL-ML, GM-GC, ML, GM	A-4	0-3	65-85	60-80	50-70	40-70	20-35	3-10
	7-34	Gravelly silt loam, gravelly loam.	CL-ML, GM-GC, GM, ML	A-4	0-5	60-75	55-75	45-70	36-65	20-35	3-10
	34-60	Gravelly silt loam, gravelly loam.	CL-ML, GM-GC, SC-SM, GM	A-4, A-2, A-1	0-5	35-75	30-75	25-70	20-65	20-35	3-10
Ln----- Lindell	0-9	Silt loam-----	ML, CL, CL-ML	A-4	0	90-100	75-100	65-90	55-80	18-30	3-10
	9-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-4, A-6	0-2	90-100	75-95	65-90	55-80	23-39	6-18
Lo----- Lobelville	0-7	Gravelly silt loam.	ML, CL-ML, GM, GM-GC	A-4	0-5	65-85	55-75	45-70	35-65	<30	NP-10
	7-41	Gravelly silt loam, gravelly loam, gravelly silty clay loam.	CL-ML, ML, GM, GM-GC	A-4, A-6	0-5	65-85	55-75	45-70	35-65	22-35	3-12
	41-60	Extremely gravelly clay loam, very gravelly loam, extremely gravelly sandy loam.	GM, GM-GC, GC	A-1, A-2, A-4	0-5	30-65	15-50	15-45	10-40	<30	NP-10
LuB, LuC, LuD---- Luverne	0-11	Fine sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	11-30	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	30-60	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
MnD, MnE----- Minvale	0-10	Gravelly silt loam.	ML, CL, GM, GC	A-4	0-5	55-80	50-75	40-70	36-60	20-30	NP-10
	10-49	Gravelly silty clay loam, gravelly silt loam, gravelly loam.	CL, CL-ML, GC, GM-GC	A-4, A-6	0-5	50-75	50-75	40-70	36-65	20-40	5-15
	49-60	Gravelly silty clay loam, gravelly silty clay.	CL, ML, GC, SC	A-4, A-6, A-7	0-5	55-80	50-75	40-70	36-65	25-50	7-23
MoB----- Mountview	0-13	Silt loam-----	ML, CL-ML	A-4	0	100	95-100	95-100	80-96	20-30	2-7
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	95-100	90-100	80-96	30-43	10-23
	24-60	Clay, cherty clay, cherty silty clay loam.	CL, ML, MH, CH	A-6, A-7	0-20	75-100	65-100	60-98	50-96	35-65	11-32

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
MoB2----- Mountview	0-5	Silt loam-----	ML, CL-ML	A-4	0	100	95-100	95-100	80-96	20-30	2-7
	5-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	95-100	90-100	80-96	30-43	10-23
	24-60	Clay, cherty clay, cherty silty clay loam.	CL, ML, MH, CH	A-6, A-7	0-20	75-100	65-100	60-98	50-96	35-65	11-32
MoC----- Mountview	0-13	Silt loam-----	ML, CL-ML	A-4	0	100	95-100	95-100	80-96	20-30	2-7
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	95-100	90-100	80-96	30-43	10-23
	24-60	Clay, cherty clay, cherty silty clay loam.	CL, ML, MH, CH	A-6, A-7	0-20	75-100	65-100	60-98	50-96	35-65	11-32
MoC2----- Mountview	0-5	Silt loam-----	ML, CL-ML	A-4	0	100	95-100	95-100	80-96	20-30	2-7
	5-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	95-100	90-100	80-96	30-43	10-23
	24-60	Clay, cherty clay, cherty silty clay loam.	CL, ML, MH, CH	A-6, A-7	0-20	75-100	65-100	60-98	50-96	35-65	11-32
PkB, PkC----- Pickwick	0-9	Silt loam-----	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	70-95	18-32	2-11
	9-40	Silty clay loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	90-100	75-95	30-42	11-17
	40-60	Silty clay loam, clay loam, clay.	CL, ML	A-6	0-5	80-100	75-100	65-95	55-80	33-52	12-22
PkC3----- Pickwick	0-5	Silty clay loam	CL, ML	A-6, A-7	0	95-100	95-100	90-100	80-95	32-42	11-18
	5-34	Silty clay loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	90-100	75-95	30-42	11-17
	34-60	Silty clay loam, clay loam, clay.	CL, ML	A-6	0-5	80-100	75-100	65-95	55-80	33-52	12-22
PkD----- Pickwick	0-9	Silt loam-----	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	70-95	18-32	2-11
	9-40	Silty clay loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	90-100	75-95	30-42	11-17
	40-60	Silty clay loam, clay loam, clay.	CL, ML	A-6	0-5	80-100	75-100	65-95	55-80	33-52	12-22
PkD3----- Pickwick	0-5	Silty clay loam	CL, ML	A-6, A-7	0	95-100	95-100	90-100	80-95	32-42	11-18
	5-34	Silty clay loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	90-100	75-95	30-42	11-17
	34-60	Silty clay loam, clay loam, clay.	CL, ML	A-6	0-5	80-100	75-100	65-95	55-80	33-52	12-22
PM*. Pits and mines											
Pr----- Pruittton	0-10	Silt loam-----	ML, CL, CL-ML	A-4	0	80-100	75-98	65-95	65-90	20-30	3-10
	10-34	Silt loam, loam	ML, CL, CL-ML	A-4, A-6	0	80-100	75-100	65-97	60-90	20-38	3-15
	34-60	Gravelly sandy loam, gravelly loam, gravelly silt loam.	ML, CL, SM, SC	A-1, A-2, A-4, A-6	0-8	40-90	20-75	20-75	15-70	<30	NP-11

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Rb----- Riverby	0-14	Gravelly sandy loam.	SM, GM, SW-SM, GM-GC	A-1, A-2, A-4	0-15	50-85	40-75	30-65	15-50	<15	NP-5
	14-60	Very gravelly sandy loam, extremely gravelly sandy loam.	SM, GM, SW-SM, GW-GM	A-1	0-50	50-80	35-70	20-50	5-25	<15	NP-5
RfD*: Rock outcrop.											
Barfield-----	0-5	Silty clay loam	CL, CH, MH	A-6, A-7	0-10	90-100	85-95	80-90	75-85	35-65	12-35
	5-10	Clay, silty clay loam, flaggy clay.	CH, MH, CL	A-7, A-6	0-15	70-100	65-90	60-85	55-80	35-70	14-40
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
SaD----- Saffell	0-6	Gravelly fine sandy loam.	SM, SC-SM, GM, GM-GC	A-1, A-2, A-4	0-5	50-80	50-75	40-70	20-50	<25	NP-5
	6-12	Gravelly fine sandy loam, gravelly sandy clay loam, gravelly loam.	GC, SC, SC-SM, GM-GC	A-2, A-1, A-4, A-6	0-10	30-75	25-75	20-70	12-50	20-40	4-18
	12-36	Very gravelly sandy clay loam, very gravelly fine sandy loam, very gravelly loam.	GC, GP-GC, GM-GC	A-2, A-1, A-4, A-6	0-10	25-55	25-50	20-50	12-40	20-40	4-15
	36-60	Gravelly sandy loam, very gravelly sandy loam, gravelly loamy sand.	GM, GC, SM, SC	A-1, A-2, A-3	0-15	15-80	10-75	10-65	5-35	<35	NP-15
SaF----- Saffell	0-4	Gravelly fine sandy loam.	SM, SC-SM, GM, GM-GC	A-1, A-2, A-4	0-5	50-80	50-75	40-70	20-50	<25	NP-5
	4-10	Gravelly fine sandy loam, gravelly sandy clay loam, gravelly loam.	GC, SC, SC-SM, GM-GC	A-2, A-1, A-4, A-6	0-10	30-75	25-75	20-70	12-50	20-40	4-18
	10-36	Very gravelly sandy clay loam, very gravelly fine sandy loam, very gravelly loam.	GC, GP-GC, GM-GC	A-2, A-1, A-4, A-6	0-10	25-55	25-50	20-50	12-40	20-40	4-15
	36-60	Gravelly sandy loam, very gravelly sandy loam, gravelly loamy sand.	GM, GC, SM, SC	A-1, A-2, A-3	0-15	15-80	10-75	10-65	5-35	<35	NP-15

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SeB----- Silerton	0-4	Silt loam-----	ML, CL-ML, CL	A-4	0	100	95-100	95-100	70-95	20-35	3-13
	4-27	Silty clay loam, silt loam.	ML, CL	A-6, A-4	0	95-100	95-100	90-100	85-95	25-40	8-16
	27-60	Clay, sandy clay, silty clay.	MH, CL, CH	A-7	0-10	95-100	90-100	80-95	55-90	40-60	15-30
SeB2----- Silerton	0-5	Silt loam-----	ML, CL-ML, CL	A-4	0	100	95-100	95-100	70-95	20-35	3-13
	5-22	Silty clay loam, silt loam.	ML, CL	A-6, A-4	0	95-100	95-100	90-100	85-95	25-40	8-16
	22-60	Clay, sandy clay, silty clay.	MH, CL, CH	A-7	0-10	95-100	90-100	80-95	55-90	40-60	15-30
SeC----- Silerton	0-4	Silt loam-----	ML, CL-ML, CL	A-4	0	100	95-100	95-100	70-95	20-35	3-13
	4-27	Silty clay loam, silt loam.	ML, CL	A-6, A-4	0	95-100	95-100	90-100	85-95	25-40	8-16
	27-60	Clay, sandy clay, silty clay.	MH, CL, CH	A-7	0-10	95-100	90-100	80-95	55-90	40-60	15-30
SeC2----- Silerton	0-5	Silt loam-----	ML, CL-ML, CL	A-4	0	100	95-100	95-100	70-95	20-35	3-13
	5-22	Silty clay loam, silt loam.	ML, CL	A-6, A-4	0	95-100	95-100	90-100	85-95	25-40	8-16
	22-60	Clay, sandy clay, silty clay.	MH, CL, CH	A-7	0-10	95-100	90-100	80-95	55-90	40-60	15-30
SgC, SgD----- Sugargrove	0-13	Channery silt loam.	ML, CL, CL-ML, GM	A-4	0-5	65-85	55-80	45-75	40-75	25-35	4-10
	13-31	Channery silt loam, channery silty clay loam.	CL-ML, CL, GM-GC	A-4, A-6	0-10	65-85	55-80	45-75	40-70	25-40	6-20
	31-46	Channery silty clay loam, very channery silty clay loam.	CL-ML, CL, GM-GC	A-4, A-6	0-10	55-85	55-80	45-75	35-70	25-40	6-20
	46-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
SuF----- Sulphura	0-5	Channery silt loam.	ML, CL-ML, CL	A-4	0-8	70-90	65-85	60-80	55-75	20-32	2-10
	5-23	Very channery silt loam, very channery silty clay loam, channery loam.	GC, GM-GC	A-2, A-4, A-6	5-20	45-60	40-55	35-50	30-45	23-32	6-12
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
SxF*: Sulphura-----	0-5	Channery silt loam.	ML, CL-ML, CL	A-4	0-8	70-90	65-85	60-80	55-75	20-32	2-10
	5-23	Very channery silt loam, very channery silty clay loam, channery loam.	GC, GM-GC	A-2, A-4, A-6	5-20	45-60	40-55	35-50	30-45	23-32	6-12
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
Ta----- Taft	0-8	Silt loam-----	CL-ML, ML	A-4	0	100	95-100	90-100	75-95	18-30	2-10
	8-21	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	95-100	85-95	23-38	5-16
	21-57	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6, A-7	0	95-100	90-100	85-100	80-95	23-42	5-20
	57-60	Silty clay loam, clay, cherty silty clay loam.	ML, GC, CL	A-6, A-7	0-20	65-100	55-100	45-90	36-85	35-48	12-22
TbC, TbE----- Talbott	0-8	Silt loam-----	CL	A-4, A-6	0-5	95-100	90-100	85-95	75-95	25-40	8-16
	8-34	Clay, silty clay	CL, CH	A-7	0-10	95-100	90-100	85-95	80-95	41-80	20-45
	34-38	Clay, silty clay	CL, CH	A-7	0-10	95-100	90-100	85-95	80-95	41-80	20-45
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
WfA, WfB----- Wolftever	0-6	Silt loam-----	CL-ML, CL, ML	A-4, A-6	0	100	95-100	90-100	80-95	25-35	3-12
	6-16	Silty clay, silty clay loam, silt loam.	ML, CL	A-4, A-6	0	100	95-100	90-100	80-95	30-40	7-15
	16-36	Silty clay, silty clay loam, clay.	ML, MH	A-7	0	100	95-100	90-100	75-95	41-55	11-20
	36-60	Loam, clay loam, silty clay loam.	CL-ML, CL	A-6, A-7, A-4	0	100	95-100	90-100	51-90	25-45	5-20

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

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
AmA----- Armour	0-10	15-27	1.30-1.45	0.6-2.0	0.18-0.23	5.1-6.0	Low-----	0.43	5	1-3
	10-43	22-35	1.30-1.50	0.6-2.0	0.17-0.20	5.1-6.0	Low-----	0.37		
	43-60	30-50	1.35-1.55	0.6-2.0	0.10-0.18	5.1-6.0	Moderate----	0.37		
AmB----- Armour	0-6	10-27	1.30-1.45	0.6-2.0	0.18-0.22	5.1-6.0	Low-----	0.43	4	1-3
	6-41	22-35	1.30-1.50	0.6-2.0	0.16-0.20	5.1-6.0	Low-----	0.37		
	41-60	12-27	1.35-1.55	2.0-6.0	0.08-0.14	5.1-6.0	Low-----	0.28		
AsF*: Ashwood-----	0-11	22-40	1.20-1.40	0.6-2.0	0.14-0.18	5.6-7.8	Moderate----	0.28	2-1	2-5
	11-25	40-60	1.30-1.45	0.2-0.6	0.12-0.15	5.6-7.8	High-----	0.24		
	25	---	---	0.00-0.06	---	---	-----	---		
Rock outcrop.										
BfC, BfE, BfF---- Biffle	0-10	15-22	1.30-1.50	2.0-6.0	0.10-0.16	3.6-5.0	Low-----	0.24	3	.5-1
	10-32	20-32	1.40-1.60	2.0-6.0	0.08-0.14	3.6-5.0	Low-----	0.20		
	32-60	---	---	0.06-0.6	---	---	-----	---		
BnB, BnC, BnD---- Brandon	0-6	12-27	1.20-1.40	0.6-2.0	0.18-0.23	4.5-5.5	Low-----	0.37	4-3	1-4
	6-24	18-35	1.20-1.45	0.6-2.0	0.18-0.23	4.5-5.5	Low-----	0.28		
	24-60	15-35	1.20-1.45	2.0-20.0	0.05-0.12	4.5-5.5	Low-----	0.17		
BrB, BrC, BrC3, BrD, BrD3----- Braxton	0-5	20-35	1.35-1.50	0.6-2.0	0.18-0.22	5.1-6.0	Low-----	0.32	5	1-3
	5-12	40-60	1.25-1.45	0.6-2.0	0.12-0.17	5.1-6.0	Moderate----	0.20		
	12-60	45-65	1.25-1.45	0.2-0.6	0.10-0.15	5.1-6.5	Moderate----	0.20		
BsC*, BsE*, BtE*: Braxton-----	0-10	20-35	1.35-1.50	2.0-6.0	0.12-0.18	5.1-6.0	Low-----	0.28	5	1-3
	10-32	40-60	1.25-1.45	0.6-2.0	0.12-0.17	5.1-6.0	Moderate----	0.20		
	32-60	45-65	1.25-1.45	0.2-0.6	0.10-0.15	5.1-6.5	Moderate----	0.20		
Talbott-----	0-5	15-25	1.30-1.45	2.0-6.0	0.10-0.15	4.5-6.0	Low-----	0.32	2	.5-2
	5-38	40-60	1.40-1.60	0.2-0.6	0.12-0.16	5.1-7.3	Moderate----	0.24		
	38	---	---	0.00-0.06	---	---	-----	---		
BxC*: Braxton-----	0-3	20-35	1.35-1.50	0.6-2.0	0.18-0.22	5.1-6.0	Low-----	0.32	5	1-3
	3-12	40-60	1.25-1.45	0.6-2.0	0.12-0.17	5.1-6.0	Moderate----	0.20		
	12-60	45-65	1.25-1.45	0.2-0.6	0.10-0.15	5.1-6.5	Moderate----	0.20		
Talbott-----	0-3	32-50	1.35-1.55	0.6-2.0	0.10-0.16	5.1-6.5	Moderate----	0.32	2-1	<1
	3-38	40-60	1.30-1.50	0.2-0.6	0.10-0.14	5.1-7.3	Moderate----	0.24		
	38	---	---	0.00-0.06	---	---	-----	---		
Gullied land.										
By----- Bruno	0-12	3-10	1.40-1.55	6.0-20	0.10-0.15	5.1-7.3	Low-----	0.17	5	.5-2
	12-49	2-8	1.40-1.60	6.0-20	0.05-0.10	5.1-7.3	Low-----	0.15		
	49-60	2-8	1.40-1.60	6.0-20	0.02-0.05	5.1-7.3	Low-----	0.10		
DkB, DkC----- Dickson	0-11	15-26	1.30-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.43	4	.5-2
	11-22	18-30	1.35-1.55	0.6-2.0	0.18-0.20	4.5-5.5	Low-----	0.43		
	22-33	20-32	1.55-1.75	0.06-0.6	0.05-0.11	4.5-5.5	Low-----	0.43		
	33-60	35-50	1.35-1.55	0.2-0.6	0.02-0.04	4.5-5.5	Moderate----	0.28		

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH			Pct	
Eg----- Egam	0-9	20-35	1.30-1.45	0.2-0.6	0.18-0.22	5.6-7.3	Moderate-----	0.32	5	2-4
	9-48	35-50	1.30-1.45	0.2-0.6	0.14-0.20	5.6-7.3	Moderate-----	0.32		
	48-60	30-45	1.30-1.45	0.2-0.6	0.12-0.18	5.6-8.4	Moderate-----	0.37		
En----- Ennis	0-7	12-25	1.30-1.45	2.0-6.0	0.10-0.15	4.5-6.0	Low-----	0.28	5	1-3
	7-60	18-32	1.35-1.50	2.0-6.0	0.08-0.15	4.5-6.0	Low-----	0.28		
Gu----- Guthrie	0-10	10-25	1.35-1.55	0.6-2.0	0.20-0.22	3.6-5.5	Low-----	0.43	4	1-2
	10-31	18-30	1.40-1.60	0.6-2.0	0.18-0.20	3.6-5.5	Low-----	0.43		
	31-60	18-32	1.60-1.75	0.06-0.2	0.03-0.05	3.6-5.5	Low-----	0.43		
HuB, HuC----- Humphreys	0-10	12-25	1.35-1.50	2.0-6.0	0.10-0.15	4.5-6.0	Low-----	0.28	5	2-4
	10-43	18-32	1.35-1.55	2.0-6.0	0.09-0.14	4.5-6.0	Low-----	0.24		
	43-60	18-32	1.40-1.60	2.0-6.0	0.06-0.12	4.5-6.0	Low-----	0.24		
IrC, IrD----- Ironcity	0-7	12-25	1.20-1.40	0.6-2.0	0.14-0.18	4.5-5.5	Low-----	0.28	5	.5-2
	7-36	25-35	1.30-1.55	0.6-2.0	0.14-0.18	4.5-5.5	Low-----	0.28		
	36-60	35-50	1.35-1.65	0.6-2.0	0.08-0.13	4.5-5.5	Moderate-----	0.24		
LaB----- Lax	0-13	8-25	1.30-1.45	0.6-2.0	0.18-0.22	4.5-6.5	Low-----	0.43	4-3	.5-2
	13-27	18-35	1.30-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.43		
	27-49	18-35	1.50-1.75	0.06-0.2	0.06-0.10	4.5-5.5	Low-----	0.37		
	49-60	30-45	1.40-1.60	0.6-6.0	0.06-0.10	4.5-5.5	Moderate-----	0.32		
LaC----- Lax	0-5	8-25	1.30-1.45	0.6-2.0	0.18-0.22	4.5-6.5	Low-----	0.43	4-3	.5-2
	5-27	18-35	1.30-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.43		
	27-49	18-35	1.50-1.75	0.06-0.2	0.06-0.10	4.5-5.5	Low-----	0.37		
	49-60	30-45	1.40-1.60	0.6-6.0	0.06-0.10	4.5-5.5	Moderate-----	0.32		
Le----- Lee	0-7	18-27	1.35-1.50	0.6-2.0	0.12-0.18	4.5-6.5	Low-----	0.28	5	1-3
	7-34	18-27	1.35-1.50	0.6-2.0	0.09-0.14	4.5-5.5	Low-----	0.28		
	34-60	18-27	1.35-1.50	0.6-2.0	0.06-0.12	4.5-5.5	Low-----	0.28		
Ln----- Lindell	0-9	20-32	1.35-1.50	0.6-2.0	0.16-0.20	5.6-7.3	Low-----	0.32	5	1-3
	9-60	20-35	1.35-1.50	0.6-2.0	0.14-0.17	5.6-7.3	Low-----	0.28		
Lo----- Lobelville	0-7	15-27	1.30-1.45	0.6-2.0	0.12-0.18	4.5-6.0	Low-----	0.28	5	1-2
	7-41	18-32	1.35-1.50	0.6-2.0	0.10-0.16	4.5-6.0	Low-----	0.28		
	41-60	10-30	1.35-1.50	2.0-6.0	0.04-0.10	4.5-6.0	Low-----	0.20		
LuB, LuC, LuD----- Luverne	0-11	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low-----	0.24	5	.5-1
	11-30	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	30-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low-----	0.28		
MnD, MnE----- Minvale	0-10	15-30	1.30-1.45	2.0-6.0	0.14-0.18	4.5-5.5	Low-----	0.28	5	.5-2
	10-49	20-35	1.40-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.28		
	49-60	25-45	1.40-1.55	0.6-2.0	0.11-0.17	4.5-5.5	Low-----	0.28		
MoB----- Mountview	0-13	15-25	1.35-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.43	5	1-3
	13-24	20-35	1.40-1.60	0.6-2.0	0.17-0.20	4.5-5.5	Low-----	0.43		
	24-60	35-55	1.30-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Moderate-----	0.32		
MoB2----- Mountview	0-5	15-25	1.35-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.43	5	1-3
	5-24	20-35	1.40-1.60	0.6-2.0	0.17-0.20	4.5-5.5	Low-----	0.43		
	24-60	35-55	1.30-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Moderate-----	0.32		
MoC----- Mountview	0-13	15-25	1.35-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.43	5	1-3
	13-24	20-35	1.40-1.60	0.6-2.0	0.17-0.20	4.5-5.5	Low-----	0.43		
	24-60	35-55	1.30-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Moderate-----	0.32		

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in					Pct
MoC2----- Mountview	0-5	15-25	1.35-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.43	5	1-3
	5-24	20-35	1.40-1.60	0.6-2.0	0.17-0.20	4.5-5.5	Low-----	0.43		
	24-60	35-55	1.30-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Moderate----	0.32		
PkB, PkC----- Pickwick	0-9	12-22	1.30-1.50	0.6-2.0	0.20-0.23	4.5-5.5	Low-----	0.43	5	.5-3
	9-40	22-35	1.40-1.65	0.6-2.0	0.19-0.22	4.5-5.5	Low-----	0.37		
	40-60	32-45	1.45-1.65	0.6-2.0	0.15-0.20	4.5-5.5	Low-----	0.37		
PkC3----- Pickwick	0-5	27-35	1.30-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.37	5	.5-2
	5-34	22-35	1.40-1.65	0.6-2.0	0.19-0.22	4.5-5.5	Low-----	0.37		
	34-60	32-45	1.45-1.65	0.6-2.0	0.15-0.20	4.5-5.5	Low-----	0.37		
PkD----- Pickwick	0-9	12-22	1.30-1.50	0.6-2.0	0.20-0.23	4.5-5.5	Low-----	0.43	5	.5-3
	9-40	22-35	1.40-1.65	0.6-2.0	0.19-0.22	4.5-5.5	Low-----	0.37		
	40-60	32-45	1.45-1.65	0.6-2.0	0.15-0.20	4.5-5.5	Low-----	0.37		
PkD3----- Pickwick	0-5	27-35	1.30-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.37	5	.5-2
	5-34	22-35	1.40-1.65	0.6-2.0	0.19-0.22	4.5-5.5	Low-----	0.37		
	34-60	32-45	1.45-1.65	0.6-2.0	0.15-0.20	4.5-5.5	Low-----	0.37		
PM*. Pits and mines										
Pr----- Pruitton	0-10	10-28	---	2.0-6.0	0.18-0.22	4.5-6.0	Low-----	0.37	5	2-4
	10-34	18-32	---	2.0-6.0	0.16-0.20	4.5-6.0	Low-----	0.32		
	34-60	7-25	---	2.0-6.0	0.05-0.12	4.5-6.0	Low-----	0.24		
Rb----- Riverby	0-14	5-12	1.20-1.40	2.0-6.0	0.08-0.12	5.1-7.3	Low-----	0.20	3	1-2
	14-60	4-20	1.30-1.60	>6.0	0.03-0.06	5.1-7.3	Low-----	0.15		
RfD*: Rock outcrop.										
Barfield-----	0-5	35-55	1.30-1.50	0.2-0.6	0.10-0.15	6.1-7.8	Moderate----	0.24	1-1	2-4
	5-10	35-55	1.30-1.50	0.2-0.6	0.09-0.14	6.1-7.8	High-----	0.17		
	10	---	---	---	---	---	-----	---		
SaD----- Saffell	0-6	5-20	1.35-1.60	2.0-6.0	0.07-0.17	4.5-5.5	Low-----	0.20	5	1-2
	6-12	10-35	1.35-1.60	0.6-2.0	0.06-0.15	4.5-5.5	Low-----	0.28		
	12-36	12-35	1.35-1.60	0.6-2.0	0.06-0.12	4.5-5.5	Low-----	0.28		
	36-60	10-25	1.40-1.65	0.6-6.0	0.04-0.11	4.5-5.5	Low-----	0.17		
SaF----- Saffell	0-4	5-20	1.35-1.60	2.0-6.0	0.07-0.17	4.5-5.5	Low-----	0.20	5	1-2
	4-10	10-35	1.35-1.60	0.6-2.0	0.06-0.15	4.5-5.5	Low-----	0.28		
	10-36	12-35	1.35-1.60	0.6-2.0	0.06-0.12	4.5-5.5	Low-----	0.28		
	36-60	10-25	1.40-1.65	0.6-6.0	0.04-0.11	4.5-5.5	Low-----	0.17		
SeB----- Silerton	0-4	16-27	1.40-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.49	5	.5-2
	4-27	24-35	1.40-1.55	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.43		
	27-60	40-60	1.40-1.55	0.2-0.6	0.13-0.17	4.5-5.5	Moderate----	0.24		
SeB2----- Silerton	0-5	16-27	1.40-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.49	5	.5-2
	5-22	24-35	1.40-1.55	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.43		
	22-60	40-60	1.40-1.55	0.2-0.6	0.13-0.17	4.5-5.5	Moderate----	0.24		
SeC----- Silerton	0-4	16-27	1.40-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.49	5	.5-2
	4-27	24-35	1.40-1.55	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.43		
	27-60	40-60	1.40-1.55	0.2-0.6	0.13-0.17	4.5-5.5	Moderate----	0.24		

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
SeC2----- Silerton	0-5	16-27	1.40-1.55	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.49	5	.5-2
	5-22	24-35	1.40-1.55	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.43		
	22-60	40-60	1.40-1.55	0.2-0.6	0.13-0.17	4.5-5.5	Moderate----	0.24		
SgC, SgD----- Sugargrove	0-13	10-27	1.20-1.40	0.6-2.0	0.14-0.19	4.5-5.5	Low-----	0.28	4	1-3
	13-31	18-35	1.30-1.50	0.6-2.0	0.14-0.19	4.5-5.5	Low-----	0.28		
	31-46	18-35	1.30-1.50	0.6-2.0	0.10-0.19	4.5-5.5	Low-----	0.28		
	46-60	---	---	0.0-0.2	---	---	-----	---		
SuF----- Sulphura	0-5	15-25	1.30-1.50	2.0-6.0	0.12-0.17	5.1-6.0	Low-----	0.24	2	.5-2
	5-23	18-32	1.35-1.55	2.0-6.0	0.07-0.14	5.1-6.5	Low-----	0.24		
	23	---	---	0.00-0.06	---	---	-----	---		
SxF*: Sulphura-----	0-5	15-25	1.30-1.50	2.0-6.0	0.12-0.17	5.1-6.0	Low-----	0.24	2	.5-2
	5-23	18-32	1.35-1.55	2.0-6.0	0.07-0.14	5.1-6.5	Low-----	0.24		
	23	---	---	0.00-0.06	---	---	-----	---		
Rock outcrop.										
Ta----- Taft	0-8	10-25	1.30-1.40	0.6-2.0	0.20-0.22	4.5-5.5	Low-----	0.43	4	2-5
	8-21	18-35	1.30-1.50	0.6-2.0	0.18-0.20	4.5-5.5	Low-----	0.43		
	21-57	15-35	1.50-1.65	0.06-0.2	0.03-0.07	4.5-5.5	Low-----	0.43		
	57-60	8-45	1.35-1.60	0.2-0.6	0.01-0.03	4.5-5.5	Low-----	0.37		
TbC, TbE----- Talbott	0-8	15-27	1.35-1.50	0.6-2.0	0.16-0.20	5.1-6.5	Low-----	0.37	2-1	.5-2
	8-34	40-60	1.30-1.50	0.2-0.6	0.10-0.14	5.1-6.5	Moderate----	0.24		
	34-38	40-60	1.30-1.50	0.2-0.6	0.09-0.13	6.1-7.8	Moderate----	0.24		
	38	---	---	0.00-0.06	---	---	-----	---		
WfA, WfB----- Wolftever	0-6	22-40	1.35-1.45	0.6-2.0	0.17-0.20	4.5-5.5	Low-----	0.37	5	1-3
	6-16	22-45	1.35-1.50	0.2-0.6	0.15-0.18	4.5-5.5	Low-----	0.32		
	16-36	35-55	1.40-1.60	0.2-0.6	0.13-0.17	4.5-5.5	Moderate----	0.32		
	36-60	20-40	1.40-1.60	0.2-0.6	0.13-0.17	4.5-5.5	Low-----	0.32		

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

TABLE 15.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
AmA----- Armour	B	Occasional	Very brief	Dec-Apr	>6.0	---	---	>60	---	Moderate	Moderate.
AmB----- Armour	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
AsF*: Ashwood----- Rock outcrop.	C	None-----	---	---	>6.0	---	---	20-40	Hard	High-----	Low.
BfC, BfE, BfF----- Biffle	B	None-----	---	---	>6.0	---	---	20-40	Soft	Moderate	High.
BnB, BnC, BnD----- Brandon	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	High.
BrB, BrC, BrC3, BrD, BrD3----- Braxton	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
BsC*, BsE*, BtE*: Braxton----- Talbott-----	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
BxC*: Braxton----- Talbott----- Gullied land.	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
By----- Bruno	A	Frequent----	Brief-----	Dec-Jun	4.0-6.0	Apparent	Dec-Apr	>60	---	Low-----	Low.
DkB, DkC----- Dickson	C	None-----	---	---	2.0-3.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
Eg----- Egam	C	Occasional	Very brief	Dec-Apr	2.5-3.5	Apparent	Dec-Mar	>60	---	High-----	Low.
En----- Ennis	B	Occasional	Very brief	Dec-Mar	>6.0	---	---	>60	---	Low-----	Moderate.
Gu----- Guthrie	D	None-----	---	---	+2-1.0	Perched	Dec-May	>60	---	High-----	High.
HuB, HuC----- Humphreys	B	None-----	---	---	5.0-6.0	Apparent	Dec-Mar	>60	---	Moderate	Moderate.
IrC, IrD----- Ironcity	B	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
LaB, LaC----- Lax	C	None-----	---	---	1.5-2.5	Perched	Dec-Mar	>60	---	High-----	Moderate.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
Le----- Lee	D	Occasional	Very brief	Dec-Mar	0.5-2.0	Apparent	Dec-Apr	>60	---	High-----	High.
Ln----- Lindell	C	Occasional	Very brief	Dec-Mar	2.0-3.0	Apparent	Dec-Mar	>60	---	Moderate	Low.
Lo----- Lobelville	C	Occasional	Very brief to brief.	Dec-Apr	2.0-3.0	Apparent	Dec-Apr	>60	---	High-----	Moderate.
LuB, LuC, LuD----- Luverne	C	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
MnD, MnE----- Minvale	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Low.
MoB, MoB2, MoC, MoC2----- Mountview	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
PkB, PkC, PkC3, PkD, PkD3----- Pickwick	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
PM*. Pits and mines											
Pr----- Pruitton	B	Occasional	Brief-----	Nov-Mar	>6.0	---	---	>60	---	Low-----	Moderate.
Rb----- Riverby	A	Frequent----	Very brief to brief.	Nov-Jun	4.0-5.0	Apparent	Dec-Apr	>60	---	Low-----	Moderate.
RfD*: Rock outcrop.											
Barfield-----	D	None-----	---	---	>6.0	---	---	8-20	Hard	High-----	Low.
SaD, SaF----- Saffell	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Moderate.
SeB, SeB2, SeC, SeC2----- Silerton	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
SgC, SgD----- Sugargrove	B	None-----	---	---	>6.0	---	---	>40	Soft	Moderate	Moderate.
SuF----- Sulphura	B	None-----	---	---	>6.0	---	---	20-40	Hard	Low-----	Moderate.
SxF*: Sulphura----- Rock outcrop.	B	None-----	---	---	>6.0	---	---	20-40	Hard	Low-----	Moderate.
Ta----- Taft	C	None-----	---	---	1.0-1.5	Perched	Jan-Apr	>60	---	High-----	High.
TbC, TbE----- Talbott	C	None-----	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro- logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard- ness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
WfA----- Wolftever	C	Occasional	Very brief	Dec-Apr	2.5-3.5	Apparent	Dec-Mar	>60	---	High-----	High.
WfB----- Wolftever	C	Rare-----	---	---	2.5-3.5	Apparent	Dec-Mar	>60	---	High-----	High.

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

TABLE 16.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Armour-----	Fine-silty, mixed, thermic Ultic Hapludalfs
Ashwood-----	Fine, mixed, thermic Vertic Argiudolls
Barfield-----	Clayey, mixed, thermic Lithic Hapludolls
Biffle-----	Fine-loamy, siliceous, thermic Typic Hapludults
Brandon-----	Fine-silty, mixed, thermic Typic Hapludults
Braxton-----	Fine, mixed, thermic Typic Paleudalfs
Bruno-----	Sandy, mixed, thermic Typic Udifluvents
Dickson-----	Fine-silty, siliceous, thermic Glossic Fragiudults
Egam-----	Fine, mixed, thermic Cumulic Hapludolls
Ennis-----	Fine-loamy, siliceous, thermic Fluventic Dystrachrepts
Guthrie-----	Fine-silty, siliceous, thermic Typic Fragiaquults
Humphreys-----	Fine-loamy, siliceous, thermic Humic Hapludults
Ironcity-----	Fine-loamy, siliceous, thermic Typic Paleudults
Lax-----	Fine-silty, siliceous, thermic Typic Fragiudults
Lee-----	Fine-loamy, siliceous, acid, thermic Typic Endoaquepts
Lindell-----	Fine-loamy, mixed, thermic Fluvaquentic Eutrochrepts
Lobelville-----	Fine-loamy, siliceous, thermic Fluvaquentic Dystrachrepts
Luverne-----	Clayey, mixed, thermic Typic Hapludults
Minvale-----	Fine-loamy, siliceous, thermic Typic Paleudults
Mountview-----	Fine-silty, siliceous, thermic Typic Paleudults
Pickwick-----	Fine-silty, mixed, thermic Typic Paleudults
Pruitton-----	Fine-loamy, siliceous, thermic Fluventic Dystrachrepts
Riverby-----	Loamy-skeletal, mixed, nonacid, thermic Typic Udifluvents
Saffell-----	Loamy-skeletal, siliceous, thermic Typic Hapludults
Silerton-----	Fine-silty, siliceous, thermic Typic Paleudults
Sugargrove-----	Fine-loamy, mixed, thermic Typic Hapludults
Sulphura-----	Loamy-skeletal, siliceous, thermic Ruptic-Alfic Dystrachrepts
Taft-----	Fine-silty, siliceous, thermic Glossaquic Fragiudults
Talbott-----	Fine, mixed, thermic Typic Hapludalfs
Wolftever-----	Clayey, mixed, thermic Aquic Hapludults

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