Series 1949, No. 2

Issued March 1958

SOIL SURVEY

Houston County Tennessee

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

How to Use THE SOIL SURVEY REPORT

THIS REPORT is about the soils of Houston County. It describes each kind of soil and states how it can be used, how it responds to treatment, how you need to take care of it, and what yields you can expect.

Soil boundaries have been plotted on aerial photographs to make a soil map of the entire county. Roads, houses, streams, other important landmarks, and place names were marked on the map. You can also see on the photographs the woodlands, the open fields, and something about how the fields are arranged. Remember, however, that the photographs were made in 1949. If woodlands have been cleared, or if fields have been rearranged, the map will not show these changes.

Find Your Farm on the Map

Look at the small map of the county at the back of this report. It shows the main roads and streams, and several place names. Find the part of the county in which your farm is located and notice the big red number in the rectangle. This number tells you the aerial photograph on which you will find your farm. If your farm is near the edge of a rectangle, you will have to check its exact location on the large-scale aerial photographs.

On the aerial photograph look at the red lines that are the boundaries of the different kinds of soil. Each kind of soil is marked by a letter symbol, also printed in red. Usually the letter symbol is inside the area it identifies, but if the area is too small, the symbol is outside and connected to the area by a straight red line.

Make a list of the different symbols on your farm and then turn to the map legend, where each symbol is followed by the name of the soil it identifies. You are now ready to learn about the strong points and shortcomings of your soils and what you can do to take care of them and get best returns year after year.

Suppose you have found on your farm a symbol Bp, which means Briensburg silt loam. This soil and all the other soils mapped in the county are described in the section, Soils of Houston County. After you have read about the Briensburg soil, you will want to know how much it can produce. For this information, turn to table 7 in the section, Estimated Yields. This table gives expected yields under two levels of management—the prevailing management, and good management.

What should be done to care for the soil and to get the better yields given in table 7? The answer is found by first noting that Briensburg silt loam is in management group 2 (see last column in table 7), and by then turning to Management Group 2 in the section on soil use and management.

Management group 2 consists of Briensburg silt loam and another soil that needs the same kind of management. You will note that these soils are imperfectly drained and susceptible to flooding but fair to good for crops and excellent for pasture. Read about the management needed to get the yields given in columns A of table 7, and about the better management required to get the higher yields in columns B.

Make a Farm Plan

Study your soils. See whether you have been cultivating any that would be better as pasture or woodlots. Compare the yields you have been getting with those you could expect under different management. Then, decide whether or not you should change your methods of farming. The choice, of course, must be yours. You will probably need help in making your own farm plan if you decide to change your methods. This report will help you in planning but it is not a plan of management for your farm or any other single farm in the county.

If you find that you need help in farm planning, consult the Soil Conservation Service or the county agricultural agent. Members of your State experiment station staff and others familiar with farming in your county also will be glad to help you.

Soils of the County as a Whole

Many users of this report will want to know something about the kinds of soil that occur in each part of the county. The section, Soil Associations, will be useful to them. Others will want to know about the general suitability of the soils for crops, pasture, forest, and wildlife. They should refer to the section, Capability Groups of Soils. Information about the principal rock formations, climate, agriculture, and several other topics appear in the section, General Nature of the Area, and the section, Agriculture. A technical discussion of the soils is given in the section, Soil Series and Their Relations.

This publication on the soil survey of Houston County, Tenn., is a cooperative contribution from the—

SOIL CONSERVATION SERVICE

TENNESSEE AGRICULTURAL EXPERIMENT STATION

TENNESSEE VALLEY AUTHORITY

Series 1949, No. 2 Issued March 1958

SOIL SURVEY OF HOUSTON COUNTY, TENN.

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United States Department of Agriculture in cooperation with the Tennessee Agricultural Experiment Station and the Tennessee Valley Authority

Contents

[1] At time of survey (1949), Soil Survey was part of the Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, United States Department of Agriculture. Soil Survey was transferred to the Soil Conservation Service on November 15, 1952.

HOUSTON COUNTY, named for Gen. Sam Houston, was organized from parts of Dickson, Humphreys, and Stewart Counties in 1871. About 75 percent of the county is covered by forest, of which 55 is farm woodland. Although forest products supply some cash income, the farms are generally small and of the type that produces mainly for the farm household. Corn, lespedeza, and wheat are the chief crops. Some corn and hay are sold locally, but the crops are grown mainly for home use or for livestock. Much of the cleared land is in pasture.

To provide a basis for use of the land, this cooperative soil survey was begun in 1947 by the United States Department of Agriculture, the Tennessee Agricultural Experiment Station, and the Tennessee Valley Authority. Unless otherwise specifically mentioned, all statements in this report refer to conditions in the county at that time.

General Nature of the Area

Location and Extent

Houston County, in the northwestern part of middle Tennessee (fig. 1), is bounded on the north by Stewart and Montgomery Counties, on the east by Montgomery and Dickson Counties, on the south by Humphreys County, and on the west by the Tennessee River (Kentucky Reservoir).

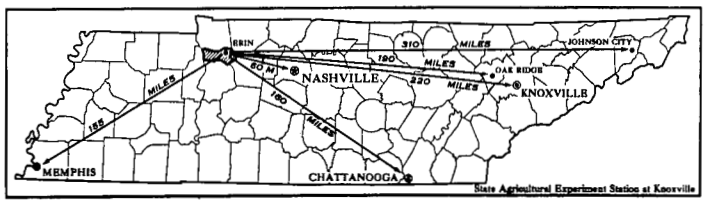

Figure 1.—**Location of Houston County in Tennessee.**

Erin, the county seat and principal town, is 155 miles northeast of Memphis and 60 miles northwest of Nashville. The county occupies 132,480 acres, or 207 square miles. About 4,780 acres are flooded by Kentucky Reservoir.

The first settlements were made about 1798 in the vicinity of Stewart (*9*).[2] The county was formed in 1871. The county seat was changed from Arlington to Erin in 1878. The early settlers were mainly from North Carolina, although a few came from elsewhere along the eastern seaboard. The present population consists largely of descendants of these pioneers. Erin had a population of 858 in 1950, and the county population of 5,318 was classified entirely as rural.

Physiography, Relief, and Drainage

Houston County is within the Highland Rim section of the Interior Low Plateaus physiographic province (*8*). The old peneplain of which this county is a part has been highly dissected by the Tennessee and Cumberland Rivers or their tributaries.

Tennessee Ridge, which forms the divide between the two drainage systems, is the least dissected part of the old plain. Near the village of Tennessee Ridge this divide is a comparatively broad undulating to rolling upland plain. Most of the uplands, however, are characterized by a well-developed dendritic drainage pattern, narrow winding ridge crests, and steep ridge slopes that alternate with nearly level creek valleys. The valleys range from a few feet in width near the heads of the streams to half a mile or more near the mouths of the larger streams.

The flood plains are nearly level, but gently sloping colluvial fans occur as narrow belts along the base of the adjacent upland slopes. Some generally long and narrow areas of high stream terraces lie along the larger creeks in places. Cherty limestone or material weathered from cherty limestone covers most of the county (*4*), but a thin mantle of silt, relatively free of chert, covers the crests of the broader ridges and many of the lesser slopes. This mantle is predominantly loess and varies from a few inches to about 3½ feet in thickness.

The ridge crests in the county are about 500 to 750 feet above sea level, but the relief of the county ranges from less than 100 feet to about 400 feet.

A small part of the county is in the basin of Wells Creek. The uplands are rolling to strongly rolling, but almost half of this area consists of nearly level flood plains and terraces of Wells Creek. The surface layer, which is largely phosphatic, developed from material weathered from old highly tilted shale, limestone, dolomite, and siltstone (*3*). The basin is surrounded and sharply outlined by high cherty ridges.

The flood plain of the Tennessee River consisted of nearly level to undulating flood plains and terraces. It is now covered by Kentucky Reservoir, which has a normal pool level of 359 feet.

Climate

Houston County has a warm-temperate, humid climate characterized by hot summers and a lack of a distinct dry season. The average rainfall of about 50 inches is evenly distributed throughout the year. Snowfall is usually light and accounts for only a small part of the precipitation. The greater loss of soil moisture through evaporation and transpiration in the summer and fall, combined with heavy showers that cause high runoff, may result in fall droughts in some years. The spread between the average summer and winter temperatures is nearly 37° F. The data shown in table 1 are compiled from records of the United States Weather Bureau station at Dover in adjoining Stewart County.

The winters are generally open and mild with only occasional severe cold, but the summers are long and hot. Temperatures above 95° or below 0° F. are not common and are generally of short duration. The mild winter weather permits many outdoor farming operations. Some plowing is done in late winter, but moisture conditions are often unfavorable for planting or cultivation. The soil freezes to depths of only a few inches and ordinarily remains frozen for but a few days. This alternate freezing and thawing tends to result in heaving of winter grain crops, especially on imperfectly drained and heavy tex-

[2] Italic numbers in parantheses refer to Literature Cited, p. 42.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Dover, Stewart County, Tenn.*

[ELEVATION, 492 FEET]

Month	Temperature [1]—average	Precipitation [2]		
		Average	Driest year (1930)	Wettest year (1923)
	°F.	*Inches*	*Inches*	*Inches*
December	40. 9	4. 30	2. 76	8. 17
January	39. 2	5. 49	7. 32	8. 73
February	42. 0	3. 88	4. 06	3. 78
Winter	40. 7	13. 67	14. 14	20. 68
March	49. 8	5. 31	2. 02	9. 59
April	59. 4	3. 86	1. 23	3. 67
May	66. 6	3. 90	4. 89	5. 89
Spring	58. 6	13. 07	8. 14	19. 15
June	75. 3	4. 03	. 97	6. 42
July	78. 4	3. 95	1. 79	3. 60
August	77. 3	3. 65	. 92	8. 77
Summer	77. 0	11. 63	3. 68	18. 79
September	71. 7	3. 46	1. 90	4. 12
October	60. 4	3. 37	2. 35	3. 72
November	48. 9	3. 84	2. 67	4. 21
Fall	60. 3	10. 67	6. 92	12. 05
Year	59. 1	49. 04	32. 88	70. 67

[1] Average temperature based on a 55-year record, through 1954; highest and lowest temperatures not reported.

[2] Average precipitation based on a 62-year record, through 1954; wettest and driest years based on a 57-year record, 1898–1954; snowfall not reported.

tured soils. The average frost-free period of 190 days extends from April 12 to October 19. Killing frosts have been recorded as late as May 2 and as early as September 24.

The grazing period extends from about March 1 to November 1, but some pasturage is generally obtained during winter. The fruit crop is often damaged when early warm periods are followed by frosts. The warm periods bring out the blossoms, and they are killed by the frost that follows.

Temperature and moisture favor growing of many kinds of crops and pasture plants. Dry periods in the summer and fall that delay seedbed preparation and the planting of legumes and small grains frequently result in poor stands of these crops. Nevertheless, droughts seldom cause complete crop failure in Houston County. Excessively cloudy days and rainy periods, especially in winter and spring, may also delay planting and thereby reduce the yields of summer annuals. Hailstorms are rarely severe enough to destroy the crops.

Water Supply

In most of the valleys numerous springs and creeks furnish sufficient water for household use and livestock, but on the higher uplands the main water supply is from cisterns and ponds. Many of the small intermittent streams are not dependable sources of water, and in these areas wells are necessary. In only a few places has the lack of water affected the choice of the farm enterprise.

Vegetation

At the time of the first white settlement, forests probably covered all of the county. About 75 percent remains in forest, largely of the upland-hardwood type (oak and hickory). Small areas of the blackjack oak-hardwood type of forest occur on the drier sites, and the bottom land-hardwoods type occupies some of the poorly drained areas. All of the wooded lands have been heavily cut over for crossties, lumber, and firewood.

In 1945–46 the State Department of Conservation and the American Forestry Association appraised the size and stage of development of the timber resources. They found that 30 percent of the forested area was sawtimber, 18 percent was cordwood, and 52 percent was below cordwood size. The volume of sawtimber, all in hardwood, totaled 49,555 M board-feet. The average volume was 511 board-feet per acre, and the total growth was 145 board-feet per acre each year.

Agriculture

Houston County is predominantly agricultural. Farms are generally small, crops are well diversified, and production is primarily for home use. Of the 614 farms reported in the 1950 census, nearly 88 percent were operated by owners and the rest by tenants or sharecroppers.

The use of the land is apparently stabilized. The 1945–46 appraisal showed about 75 percent in forest, of which 55 percent was farm woodland, 43 percent private nonfarm forest, and slightly less than 2 percent was in public forest. Large holdings of wooded areas are controlled by individuals or corporations for future lumbering. The Tennessee Valley Authority owns a moderate acreage adjacent to Kentucky Reservoir.

According to census figures in 1950, more than half of the county, 58.5 percent, was in farms, 14,042 acres of which were in harvested cropland. Most of the crops were grown on soils well suited for this purpose, but some areas could be better used for pasture or forest. Some permanent pasture is on soils well suited to crops, although pasture rather than tilled crops is normally a better use for most of the land in this county.

According to the 1950 census, 293 farms in Houston County were classified as commercial farms. The value of farm products sold from each of 158 of these farms was less than $2,000 a year. Of the 321 remaining farms, which were not classified, 250 were listed as residential, or selling less than $250 of farm products a year, and 71 were part-time farms. The 293 classified farms were grouped by type as follows:

Type of farm:	*Number*
Livestock other than dairy and poultry	117
Field-crop	97
Dairy	5
Poultry	18
General	56

In 1950 the farms were predominantly small. About 50 percent, or 304 farms, were under 100 acres in size. Only one farm was over 1,000 acres. The average farm was 126.2 acres in size. The farms were classified by size as follows:

Acres:	*Number of farms*
Under 10	27
10 to 29	57
30 to 49	60
50 to 69	72
70 to 99	88
100 to 139	120
140 to 179	68
180 to 219	39
220 to 259	22
260 to 499	46
500 to 999	14
1,000 and more	1

Of the 132,480 acres in the county, 58.5 percent, or 77,509 acres, was in farms. The land in farms was distributed according to use as follows:

Land in farms:	*Acres*
Cropland harvested	14,042
Cropland used only for pasture	10,606
Cropland not harvested and not pastured (crop failure, idle, or fallow)	5,776
Other cropland (land in soil-improvement crops, idle, failure, etc.)	3,271
Woodland pastured	7,276
Woodland not pastured	30,965
Other land (house lots, roads, wasteland, etc.)	5,573

Erin, the county seat, is the principal market and shipping point in the county. The populous centers of Clarksville and Nashville located within a radius of 75 miles are important markets and trading centers.

Farm-to-market transportation is adequate in practically all parts of the county. The Louisville & Nashville Railroad connecting Memphis and Cincinnati passes through Erin. Hard-surfaced State highways serve the more populous areas. In 1950, 150 farms were on hard-surfaced roads, 366 on gravel roads, and 100 on dirt or unimproved roads. Regularly scheduled bus and truck lines connect Erin with the larger towns and cities in the State and give access to other communities.

Agricultural Practices

Agricultural practices vary widely in Houston County because of differences in soil type, soil-distribution patterns, lay of the land, and size of farms. Modern machinery is generally used on the larger farms in the creek valleys, whereas horse-drawn implements and hand labor are employed on hilly and steep areas and on small farms.

The small grains—wheat, barley, oats, and rye—are sown in the fall and harvested in June and July. Grasses and legumes are sown in the fall or spring. Corn usually is planted in April or May. The small-grain crop is harvested with small combines, but practically all of the corn is harvested by hand.

Although many kinds of crops are grown, most farmers do not follow a systematic rotation. The particular needs of the farmer, or the general fertility of his land, usually determine the crop to be grown.

The use of lime and commercial fertilizers has been steadily increasing in recent years. Mixed fertilizers or superphosphate are most commonly used. Commercial fertilizers are used chiefly on corn and tobacco, the principal cash crop. Phosphorus and lime are generally applied to legumes and pasture. Barnyard manure is used on tobacco, vegetables, and truck crops.

The local supply of farm labor is generally adequate, both as to quantity and quality. Only 86 farms reported hiring workers in 1950.

Farm power has been provided by horses and mules in the past. Tractors and other mechanical equipment are rapidly replacing draft animals, especially on the larger farms. Only 46 tractors were reported in 1945, whereas 116 were reported in 1950. The number of trucks increased from 61 to 141 in the same 5-year period. Electricity was reported on 371 farms in 1950.

Crops

Most farmers in Houston County follow a subsistence or general type of farming and raise some livestock. Tobacco is the main cash crop, but on nearly all farms some income comes from forest products. Corn and livestock also provide some income. Most of the crops grown are used on the farm. Some corn and hay are sold locally, but these crops are generally fed to livestock on the farm.

Corn is grown on practically all farms and is the most important crop. Hay—mainly lespedeza, red clover, and alfalfa—is also a major crop. Some wheat is grown for food. Although it is not planted widely, it is the most valuable of the small-grain crops. Small-grain crops are used chiefly as feed for livestock or as a winter cover crop and for winter pasture.

Dark-fired tobacco is strictly a cash crop. Of the 451 acres of tobacco harvested in the county in 1949, 363 acres was in dark-fired tobacco and 88 was burley. Only 2 acres of dark air-cured tobacco was harvested. Cotton farms were not reported in the 1950 census.

Fruit, berries, potatoes, sweetpotatoes, and many kinds of garden crops are grown for home use on nearly all farms. Some cowpeas and soybeans are produced, mainly for hay. The acreage of principal crops and number of bearing fruit trees and grapevines for stated years are shown in table 2.

Pasture

Practically all farms have some fields classed as pasture, either rotational or permanent. The average acreage of plowable pasture on the farms is small, however, and the quality of the grasses is generally poor. Many permanent pastures are on stony or eroded soils not suited to crops, or on poorly drained soils that are subject to flooding.

Pasture plants include lespedeza, white and hop clovers, redtop, and bermudagrass, orchardgrass, ryegrass, and bluegrass. Most pastures, however, are seeded to lespedeza or lespedeza mixed with one or more of the clovers or grasses. Broomsedge and native wild grasses dominate many pastures that have lain fallow.

Pasture management has been at a low level, but in recent years more farmers have been using fertilizers, controlling weed growth, and limiting the amount of grazing.

TABLE 2.—*Acreage of principal crops and number of bearing fruit trees and grapevines in Houston County, Tenn., in stated years*

Crop	1929	1939	1949
	Acres	*Acres*	*Acres*
Corn for grain	8, 813	8, 630	7, 510
Small grains threshed:			
Oats	7	29	55
Wheat	43	451	251
Barley	(1)	28	9
Cowpeas for all purposes	114	80	23
Soybeans for all purposes	402	115	59
All hay	6, 188	5, 558	5, 583
Lespedeza	(1)	3, 533	3, 233
Timothy and clover, alone or mixed	1, 469	608	901
Alfalfa	16	191	705
Grains cut green	255	63	165
Annual legumes	427	197	60
Other tame grasses	3, 952	957	519
Wild hay	69	9	(1)
Coarse silage and forage	[2] 325	[2] 54	[2] 38
Sorghum	294	167	72
Potatoes	147	143	[3] 60
Sweetpotatoes	124	100	[3] 26
Tobacco	1, 238	604	451
	Number [4]	*Number* [4]	*Number* [4]
Apple trees	7, 094	4, 801	2, 176
Peach trees	4, 336	7, 246	2, 404
Pear trees	354	353	178
Plum and prune trees	404	496	200
Cherry trees	58	120	65
Grapevines	367	1, 421	280

[1] Not reported.
[2] Corn only.
[3] Farms reporting less than 15 bushels harvested not included.
[4] Fruit trees are reported as of bearing age for the years 1930, 1940, and 1950. Farms reporting less than ½ acre are not included.

Livestock and Livestock Products

The livestock on the farms of Houston County consists mainly of dairy and beef cattle, hogs, sheep, horses, mules, and chickens. Table 3 lists the number of livestock on farms in stated years.

The number of horses and mules has decreased with the greater use of tractors and farm machinery, but cattle and swine are increasing as more corn and better pasture become available. Except on 117 farms listed as livestock farms in 1950, the number of livestock on individual farms is small. Most livestock and livestock products are used at home. Many farmers keep one or two dairy cows and enough hogs for their home needs. In addition, on most farms, chickens are raised for home use and as a source of income. Practically all of the sheep, most of the beef cattle, and part of the hogs are raised to supply cash income. Eighteen farms were enumerated as poultry farms in 1950.

Soils of Houston County

The soils of Houston County differ widely in color, texture, consistence, reaction, fertility, relief, stoniness, depth to underlying material, permeability, and drainage—qualities that affect the agricultural uses to which they are suited.

TABLE 3.—*Number of livestock on farms in Houston County, Tenn., in stated years*

Livestock	1930	1940	1950
Horses	440	[1] 354	317
Mules	1, 094	[1] 943	700
Cattle	2, 227	[1] 2, 422	3, 124
Sheep	1, 107	[2] 562	864
Swine	2, 544	[3] 3, 315	3, 719
Chickens	[1] 28, 194	[3] 23, 493	24, 593
Beehives	367	290	163

[1] Over 3 months old.
[2] Over 6 months old.
[3] Over 4 months old.

The soils are prevailingly hilly to steep, although they range from nearly level to steep. Most of the soils are uneroded or only slightly eroded, whereas some are moderately to severely eroded. Loose fragments of chert interfere with cultivation of many of the soils.

The majority of the soils are well drained. Poorly drained soils cover a small acreage. Soils intermediate in drainage are more common, but they also occur in small areas. A siltpan layer has formed at a depth of about 2 feet in many of the soils of the smoother uplands and high terraces.

The soils range from nearly white through gray, yellow, and brown to red. Colors intermediate between brown and gray predominate in the surface layers, whereas red and yellow dominate in the subsoils. Texture and consistence range from loose incoherent sands to plastic clays. The surface soils are mainly silt loam or cherty silt loam, whereas the subsoils are principally silty clay loams with some silty clays. The surface soils are generally mellow and friable, but the subsoils range from friable to very plastic.

The well-developed soils on the uplands and high terraces have formed under the influence of moderately high temperature, heavy rainfall, and forest cover. Because of their location, they have been severely leached and, consequently, are acid and low in fertility and organic matter. These differences, which were present in the virgin state, have been widened by erosion, cropping, or other mechanical processes that deplete the soil, or by poor management. In contrast to the impoverished soils of the uplands, many soils of the bottom lands and low terraces (second bottoms) are moderately high in natural fertility, are moderately well supplied with bases, particularly lime, and are fairly well supplied with organic matter.

Because of the differences in soil characteristics, the landscape includes soils well suited to agriculture that are highly productive and tillable, as well as soils that are hard to work and conserve and are unsuited or poorly suited to farming. Most of the soils in Houston County are between these extremes.

Soil Series and Their Relations

The soil series and their relationships to each other are more readily understood if they are grouped according to their position in the landscape. Table 4 shows the position in the landscape, parent material, and drainage of

TABLE 4.—*Soil series of Houston County, Tenn., grouped by topographic position, parent material, and drainage*

[Great soil groups are shown by letters following soil series names: G=Gray-Brown Podzolic; P=Planosol; R=Red-Yellow Podzolic; L=Lithosol; A=Alluvial soil]

Position and parent material	Excessively drained	Well-drained	Moderately well-drained	Imperfectly drained	Poorly drained
Soils of the uplands:					
1. Limestone (consolidated water deposits):					
Residuum from cherty limestone.	Baxter (R)	Baxter (R)			
Chert or very cherty limestone.	Bodine (L)	Bodine (L)			
Residuum from phosphatic sandy limestone.		Maury (G)			
Residuum from phosphatic clayey limestone and shale.		Mercer (G)	Mercer (G)		
Residuum from clayey (massive, noncherty) limestone.		Talbott (R)	Talbott (R)		
2. Loess (unconsolidated wind deposits):					
Silt, underlain by cherty limestone below 20 to 42 inches.		Mountview (R)	Mountview (R) Dickson (P)		
Silt, underlain by cherty limestone below 10 to 20 inches.		Mountview, shallow phase (R).			
Soils of the terraces:					
1. Old colluvial lands (stream terraces):					
Loess over mixed alluvium or mixed alluvium and loess, chiefly limestone material (high terraces).		Pickwick (R)	Paden (P)	Taft (P)	Robertsville (P).
Mixed alluvium, chiefly limestone material.				Taft (P)	Robertsville (P).
Alluvium mainly from cherty limestone, with some admixture of loess (low creek terraces).		Humphreys (R)	Humphreys (R)	Taft (P)	Robertsville (P).
2. Young colluvial lands (alluvium, local wash, and some colluvial material):					
Alluvium or colluvium, mainly from cherty limestone.	Minvale (R)				
Colluvium or alluvium, mainly from loess.		Tigrett (A)	Briensburg (A)	Briensburg (A)	
Colluvium or alluvium, mainly from cherty limestone.		Greendale (A)	Greendale (A)		
Soils of the bottom lands:					
1. Alluvium (stream flood plains):					
Mixed alluvium, chiefly from limestone.					Melvin (A).
Alluvium, mainly from cherty limestone, some admixture of loess.		Ennis (A)	Ennis (A)	Lobelville (A)	Melvin (A).
Mixed alluvium, mainly from sandstone.	Bruno (A)	Bruno (A)			

each soil series. In parentheses, following the series name, is a symbol showing to which great soil group the series belongs (*1, 8, 11*).

Soils of uplands

The soils of the uplands occupy lands above stream valleys. They have developed from (*a*) materials left after weathering of the underlying rocks, and (*b*) unconsolidated windblown deposits. The soils that developed from weathered rock materials reflect the properties of the underlying rocks from which they have formed. The three major classes of rocks are (1) cherty limestone, (2) noncherty limestone, and (3) shale. The soils that developed in place through weathering of rocks are the Baxter, Bodine, Maury, Talbott, and Mercer.

The Bodine and Baxter soils have developed from cherty limestone. They are readily identified by large amounts of angular chert fragments throughout the profile. They occupy hilly to steep ridge slopes or very

narrow ridge crests. The excessively drained Bodine soils are lighter colored than the well-drained Baxter soils and have less well-defined horizons. Bodine subsoils are light yellowish brown or yellowish brown, whereas Baxter subsoils are light yellowish red or red.

Talbott, Maury, and Mercer soils are confined to the basin of Wells Creek. They were derived from materials weathered from noncherty limestone or interbedded limestone and shale.

The well-drained Talbott soil is from clayey, low-phosphatic limestone. It is characterized by a brown surface layer and by a reddish-brown to yellowish-red, plastic, silty clay subsoil.

The Maury soil is from phosphatic limestone, and the Mercer soil is from phosphatic limestone and shale. The limestone under the Maury soil is slightly sandy, whereas that underlying the Mercer soil is clayey. The Maury soil is well drained and has a brown surface layer and a strong brown, moderately firm, silty clay loam subsoil. The Mercer soil is moderately well drained and has a lighter brown silt loam surface soil than the Maury soil. It has moderately firm, yellowish-brown, silty clay loam or silty clay subsoil. At 20 to 30 inches the Mercer soil is underlain by yellow, dense clay that has mottles of gray.

Dickson and Mountview soils have developed from unconsolidated wind deposits, or loess. They are mainly confined to the broader ridge crests and milder ridge slopes. They were derived from a silt layer less than 42 inches thick that is relatively free of chert. Cherty material underlies this silt layer, however.

The Dickson soils are moderately well drained and have yellowish-brown or brownish-yellow subsoils. They are characterized by a mottled, compact siltpan layer at depths of about 2 feet.

The Mountview soils generally occur on narrower ridge crests or stronger slopes than the Dickson soils. They are also better drained, lack a pan layer, and are yellowish brown in the subsoil.

Soils of the terraces

The rivers and streams once flowed at higher levels and deposited gravel, sand, and clay on their flood plains. During the process of stream cutting, the channels were gradually deepened. New flood plains were formed at lower levels, but remnants of the older high-lying flood plains were left. These areas—known as terrace lands—consist of alluvium lying above the overflow stage of the present streams. They are frequently referred to as second bottoms or benches. The soils of the terraces fall in two groups: (*a*) Soils of old colluvial lands, and (*b*) soils of young colluvial lands.

OLD COLLUVIAL LANDS

Soils of the old colluvial lands are members of the Pickwick, Paden, Taft, Robertsville, and Humphreys series. They differ from one another in color, texture, consistence, drainage, and source of parent materials.

The Taft and Robertsville soils occur on both low and high terraces along the Tennessee River. They have developed from highly mixed alluvium in which limestone dominates. The pale-yellow Taft soil is imperfectly drained, and the gray Robertsville soil is poorly drained. Areas of imperfectly drained and poorly drained associated soils, not large enough to be shown separately on the map, are included in the Taft and Robertsville series.

The Humphreys soils are on low terraces along the larger creeks that drain uplands underlain mainly by cherty limestone. The parent material of the Humphreys soil, although dominantly of cherty limestone, contains a large quantity of silty loess. The well-drained Humphreys soils have brown surface layers and dark yellowish-brown subsoils.

The Pickwick and Paden soils are on old high terraces along the Tennessee River and the larger creeks. The underlying alluvium has washed from uplands underlain mainly by limestone and loess, but it has been covered by a shallow layer of loess in most places. Differences between the Pickwick and Paden soils are closely associated with differences in drainage. The well-drained Pickwick soils are reddish brown or yellowish red, whereas the moderately well drained Paden soils are yellowish brown. Paden soils are characterized by a siltpan layer at a depth of about 2 feet. Similar soils on old colluvial positions are mapped with the Pickwick and Paden soils.

YOUNG COLLUVIAL LANDS

The soils of young colluvial lands are on sloping fans and benches at the base of slopes, particularly at the base of the longer and steeper slopes. Their parent materials were derived from soil materials and rock fragments washed and rolled from the adjacent slopes. These soils are (1) along small drainageways, (2) at the base of upland slopes, and (3) on small, sloping, alluvial-colluvial fans where the small streams have deposited their load over the broad flood plains of larger streams.

The group includes members of the Minvale, Greendale, Tigrett, and Briensburg series. Differences among the series are associated with age or differences in drainage and parent material.

The Greendale soil is grayish brown to brown, moderately well drained or well drained, and characterized by numerous chert fragments on the surface and through the profile. The parent material was washed mainly from Bodine and Baxter soils but includes some silty material from soils such as the Mountview.

The Minvale soil differs from the Greendale in having well-defined surface and subsurface layers. The color of the surface soil is similar, but the subsoil is yellowish red or reddish yellow.

Tigrett and Briensburg soils were formed from very silty materials washed mainly from Dickson, Mountview, Pickwick, and Paden soils but include materials from Bodine or Baxter in many places. The well-drained Tigrett soil is brown, whereas the imperfectly drained Briensburg is lighter colored and mottled below 10 to 18 inches.

Soils of bottom lands

The term "bottom land" means the flood plains or those nearly level areas along the streams that are subject to flooding. The material giving rise to the soils in the bottom lands has been deposited by streams; its character depends largely upon the source in the higher lying lands, and the rate at which the water was moving when the material was deposited. The soils in the bottoms are young. The material from which they are developing has not lain

in place long enough for formation or well-defined surface soil and subsoil layers, such as have formed in most of the soils of the uplands and terraces. The soils of the bottom lands are members of the Melvin, Bruno, Ennis, and Lobelville series.

The Ennis and Lobelville soils are on the flood plains of the tributary streams; they were derived mainly from alluvium washed mostly from uplands underlain by cherty limestone, but some silty loess was included. The well-drained Ennis soils are dominantly brown; the imperfectly drained Lobelville soils are highly mottled below 10 to 18 inches.

Melvin silt loam is a poorly drained, gray soil of the bottom lands. It was formed from highly mixed alluvial materials washed from uplands underlain by many kinds of rocks, among which limestone predominated. Included with the Melvin soil is a small acreage that was derived from alluvium washed chiefly from cherty limestone materials.

Practically all of the other soils of the bottom lands are on the Tennessee River flood plain and are now covered by Kentucky Reservoir. Except for the sandy Bruno soil, they were from highly mixed materials—dominantly from limestone. The excessively drained Bruno soil consists of light-brown or yellowish-brown, loose, loamy sand.

Descriptions of the Soils

In the following pages the soils of Houston County are described in detail and their relation to agriculture is set forth. The acreage and proportionate extent of these soils are listed in table 5, and their location and distribution are shown on the soil map that accompanies this report.

Not included in table 5 is 4,780 acres inundated by Kentucky Reservoir. Huntington, Lindside, and Wolftever silt loams were completely covered by the reservoir. More than half the acreage of Melvin, Robertsville, and Taft silt loams was covered, and only 20 acres of Egam silty clay loam remains above the water line. The acreages inundated by Kentucky Reservoir are as follows:

	Acres
Bodine cherty silt loam:	
Hilly phase	7
Eroded hilly phase	2
Steep phase	32
Eroded steep phase	2
Bruno loamy fine sand	5
Egam silty clay loam	258
Ennis silt loam	349
Ennis cherty silt loam	89
Greendale cherty silt loam, undulating phase	293
Humphreys silt loam	723
Humphreys cherty silt loam	2
Huntington silt loam	783
Lindside silt loam	213
Lobelville silt loam	8
Lobelville cherty silt loam	2
Melvin silt loam	295
Paden silt loam, eroded rolling phase	2
Pickwick silt loam, eroded rolling phase	3
Robertsville silt loam	372
Stony steep land, Baxter soil material	4
Taft silt loam	262
Tigrett silt loam	8
Wolftever silt loam	357
Streams now inundated	709
Total	4,780

TABLE 5.—*Approximate acreage and proportionate extent of the soils mapped in Houston County, Tenn.*

Soil	Area above reservoir line (elevation 359 feet)	Proportionate extent
	Acres	*Percent*
Baxter cherty silt loam:		
Rolling phase	938	0.7
Eroded rolling phase	735	.6
Hilly phase	2,826	2.1
Eroded hilly phase	1,999	1.6
Steep phase	5,504	4.3
Eroded steep phase	891	.7
Baxter cherty silty clay loam, severely eroded hilly phase	224	.2
Bodine cherty silt loam:		
Rolling phase	4,385	3.4
Eroded rolling phase	350	.3
Hilly phase	6,243	4.9
Eroded hilly phase	1,047	.8
Steep phase	28,971	22.6
Eroded steep phase	1,096	.9
Briensburg silt loam	406	.4
Bruno loamy fine sand	218	.2
Dickson silt loam:		
Undulating phase	1,817	1.4
Eroded undulating phase	1,425	1.3
Rolling phase	265	.2
Eroded rolling phase	316	.3
Egam silty clay loam	20	(1)
Ennis silt loam	1,783	1.4
Ennis cherty silt loam	2,640	2.1
Greendale cherty silt loam, undulating phase	9,251	7.2
Humphreys silt loam	3,518	2.8
Humphreys cherty silt loam	1,096	.9
Huntington silt loam	---	---
Lindside silt loam	---	---
Lobelville silt loam	361	.3
Lobelville cherty silt loam	461	.4
Maury silt loam, eroded rolling shallow phase	117	.1
Melvin silt loam	224	.2
Mercer silt loam, eroded rolling phase	58	(1)
Minvale cherty silt loam, eroded rolling phase	224	.2
Mountview silt loam:		
Undulating phase	1,207	.9
Eroded undulating phase	1,255	1.0
Rolling phase	7,821	6.1
Eroded rolling phase	5,378	4.2
Rolling shallow phase	7,005	5.4
Eroded rolling shallow phase	4,259	3.3
Hilly shallow phase	7,304	5.7
Eroded hilly shallow phase	5,826	4.5
Montview silty clay loam:		
Severely eroded rolling phase	569	.4
Severely eroded rolling shallow phase	357	.3
Severely eroded hilly shallow phase	1,089	.8
Paden silt loam:		
Eroded undulating phase	387	.3
Eroded rolling phase	801	.6
Paden silty clay loam, severely eroded rolling phase	125	.1
Pickwick silt loam:		
Undulating phase	144	.1
Eroded undulating phase	761	.6
Eroded rolling phase	1,365	1.1
Robertsville silt loam	121	.1
Stony steep land, Baxter soil material	808	.6
Taft silt loam	338	.3
Talbott-Pickwick silt loams, eroded rolling phases	132	.1
Tigrett silt loam	1,086	.9
Wolftever silt loam	---	---
Quarries and mines	20	(1)
Ponds and streams	133	.1
Total	127,700	100.0

[1] Less than 0.1 percent.

Figure 2.—**Chert fragments are concentrated in the surface layers of Baxter cherty silt loam and scattered throughout the profile.**

Baxter cherty silt loam, hilly phase (12 to 25 percent slopes) (Bc).—This well-drained cherty soil has developed from materials derived from cherty limestone. It occurs on ridge slopes in highly dissected uplands (fig. 2) and is the most extensive of the Baxter soils. The forest cover includes red, white, and post oaks, with hickory, elm, maple, yellow-poplar, beech, and other hardwoods. The principal areas of this soil are in the eastern and northeastern parts of the county in the Baxter-Mountview-Greendale-Ennis association.

Profile description:

0 to 6 inches, pale-brown or brown cherty loose silt loam; 4 to 8 inches thick.
6 to 12 inches, very pale brown or light grayish-brown cherty silt loam; 5 to 12 inches thick.
12 to 22 inches, yellowish-red or yellowish-brown cherty silty clay loam; moderately firm; 6 to 10 inches thick.
22 to 34 inches, red, reddish-brown, or yellowish-red silty clay; moderately firm; contains a moderate amount of chert fragments; 12 to 16 inches thick.
34 to 48 inches +, red, reddish-brown, or yellowish-brown dense clay; firm but plastic; irregular streaks or splotches of yellow, gray, and brown more abundant in lower part; bedrock at 8 feet or more in most places.

This soil is low in organic matter and plant nutrients; it is strongly to very strongly acid and permeable to plant roots. Surface runoff is rapid; internal drainage is moderate; and the water-supplying capacity is low.

Use suitability.—All of this soil is wooded. The timber has been cut over several times, and the trees in the present stand are small to medium in size. The yields are small and much of the timber is of poor quality.

This soil is poorly suited to tilled crops but fairly well suited to pasture. Chertiness and strong slopes make it hard to till, particularly with heavy farm machinery. Fair pastures can be established and maintained, but yields will be low during periods of deficient rainfall because the soil holds an inadequate amount of water and is low in fertility. Some of this soil could be used with the adjoining valley lands for pasture in a livestock-general farming system, but it is best used as woodland.

Baxter cherty silt loam, eroded hilly phase (12 to 25 percent slopes) (Bd).—This well-drained soil is more eroded than Baxter cherty silt loam, hilly phase. Part of the upper layer has been lost or mixed with the subsoil in the plow layer. Severely eroded spots are conspicuous where the subsoil is exposed.

This soil is associated with Bodine, Mountview, and Dickson soils, and with other members of the Baxter soil series. The original forest cover included varieties of oak and hickory, beech, maple, yellow-poplar, and dogwood. Areas of the soil are small and irregularly shaped. The soil is largely confined to the Baxter-Mountview-Greendale-Ennis association.

The present surface layer, a pale-brown or yellowish-brown cherty silt loam, is underlain by yellowish-red to red cherty silty clay loam. This soil is low in organic matter and plant nutrients, is strongly to very strongly acid, and is permeable to air and roots. Surface runoff is rapid; internal drainage is moderate; and the water-supplying capacity is low. Chert in the plow layer interferes with tillage.

Use suitability.—All of this soil has been cleared, but most areas are idle or in unimproved pasture. The very small acreage in crops is farmed separately in small units or with adjoining soils.

Steepness of slope, chertiness, erodibility, and low content of plant nutrients limit productivity. The soil is difficult to till and moderately difficult to conserve. The use of farm machinery is hampered by strong slopes and chertiness. A high level of management is necessary to keep the soil in crops, but fair pasture can be established and maintained. Pasture yields will be low in dry seasons, even though fertilizers have been applied, because the soil is droughty.

Baxter cherty silty clay loam, severely eroded hilly phase (12 to 25 percent slopes) (Bg).—Most of the original surface layer, and in places a part of the subsoil, has been lost from this soil. Shallow gullies are common; a few cannot be crossed with farm machinery. This well-drained soil is largely in the Baxter-Mountview-Greendale-Ennis association.

The present surface layer, a mixture of the original surface and subsoil, varies within short distances from pale-brown cherty silt loam to yellowish-red cherty silty clay loam. The moderately firm subsoil is a yellowish-red to red cherty silty clay loam.

The soil is very low in organic matter, low or very low in available plant nutrients, and strongly to very strongly acid. The surface layer is subject to clodding and baking. Water absorption is slow, and runoff is rapid or very rapid. The soil is permeable to air and roots, but its water-supplying capacity is very low. Chert on the surface and throughout the profile interferes with tillage.

Use suitability.—This soil was once cleared, but most areas are now idle and reverting to forest or in unimproved pasture.

Strong slopes, chertiness, erodibility, low water-supplying capacity, and low content of plant nutrients limit the use of this soil. It is difficult to till and conserve. Fair pastures can be established and maintained under good farm practices, but the low water-holding capacity causes

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low yields in dry seasons, even though the soil is fertilized. On many farms, this soil is best used as woodland.

Baxter cherty silt loam, steep phase (25 to 60 percent slopes) (BE).—This well-drained soil occurs on some of the steepest slopes in the uplands. Most areas are in the north-central part of the county, where they are associated with Bodine and Mountview soils and other Baxter soils. The forest cover includes oaks, hickory, maple, beech, yellow-poplar, and dogwood.

Profile description:

0 to 10 inches, pale-brown, brown, or light grayish-brown friable cherty silt loam; 8 to 15 inches thick.
10 to 22 inches, yellowish-red to red, brittle, moderately firm, silty clay loam; contains many chert fragments; 6 to 15 inches thick.
22 to 48 inches +, red, reddish-brown, or yellowish-brown, firm, moderately plastic, dense clay or silty clay, irregularly streaked and splotched with yellow, gray, and brown; mottling and splotching increase with depth; bedrock at 8 feet or more.

Cherty fragments of various sizes are scattered over the surface and throughout the profile. The soil is readily permeable to roots, moisture, and air, but its moisture-holding capacity is low. Surface runoff is rapid to very rapid, and internal drainage moderate to rapid. Small areas of Bodine and Mountview soils are included in places. Rock outcrop is exposed on some of the steeper slopes. The surface layer on the north-facing slopes is usually a little darker or browner and contains slightly more organic matter than areas exposed to the afternoon sun and drying southerly winds.

Use suitability.—All of this soil is in oak and hickory forest in which there are minor stands of beech, walnut, and tulip-poplar.

This soil—moderately low in natural productivity—is difficult to till and maintain if cleared. If it is properly fertilized and seeded, and grazing is carefully controlled, fair pastures can be established and maintained. On most farms, the soil is best used as woodland.

Baxter cherty silt loam, eroded steep phase (25 to 60 percent slopes) (BF).—Areas of this well-drained soil are small and widely scattered. This soil is associated with other members of the Baxter series and with Bodine and Mountview soils. It is distributed throughout the Baxter-Mountview-Greendale-Ennis association.

This soil is more eroded than Baxter cherty silt loam, steep phase. Much of the original surface layer has been lost. In places all of the upper soil is gone and the subsoil is exposed. Where the surface and subsoil layers have been mixed during cultivation, textural variations have appeared in the plow layer. The present surface layer is a mixture of pale-brown or yellowish-brown friable cherty silt loam and yellowish-brown cherty silty clay loam. The subsoil is yellowish-red to red, moderately firm, cherty silty clay loam. Those areas that have been influenced by silty loess material are less cherty and have a deeper silty surface layer than is generally typical for this soil. Small gullies have been formed, and a few are too deep to be crossed by farm machinery.

This soil is low in organic matter and strongly to very strongly acid. Chert fragments of various sizes are scattered over the surface and throughout the profile. The soil is permeable to roots and air and has a very low moisture-supplying capacity.

Use suitability.—All of this soil was once cleared and used for crops or pasture, but practically all of it is now idle or in pasture. The plant cover on most areas is chiefly broomsedge and other native grasses, weeds, briers, and vines, with some brush and small trees. On the more severely eroded sites, plant growth is sparse or lacking.

This soil is too cherty for practical use of farm machinery and too steep to cultivate and conserve efficiently. Furthermore, droughtiness, erodibility, and low fertility limit use for crops or pasture. It is best suited to trees.

Baxter cherty silt loam, rolling phase (5 to 12 percent slopes) (BA).—This well-drained soil occurs mainly on ridgetops in association with Bodine, Mountview, and Dickson soils and other Baxter soils on steep ridge slopes. The forest cover includes species of oak and hickory, maple, beech, yellow-poplar, and dogwood Areas of this soil are small and widely distributed, principally on the Cumberland River watershed.

The surface layer is a light grayish-brown or pale-brown to brown, cherty, friable, moderately loose silt loam. The subsoil is yellowish-red to red, moderately firm, cherty silty clay loam.

About an inch of forest debris covers the surface soil, and the upper part of that layer is darkened by organic matter. Chert fragments occur throughout the profile in different quantities and almost cover the surface in places. This soil is permeable to roots, air, and water and is strongly to very strongly acid. Although the upper layers absorb rainfall, they do not retain much water. The soil is droughty.

Use suitability.—All of this soil is wooded. The present stand of mixed hardwoods has been cut over, and the trees vary in size, age, and quality.

The soil is physically suited to many crops, including corn, small grains, tobacco, sericea lespedeza, grass, and hay. With proper amounts of lime and fertilizers, red clover and alfalfa can be grown successfully. Though chertiness interferes with cultivation, the soil is moderately easy to till and conserve. Many small areas are isolated by soils poorly suited to agriculture and, consequently, they are not cropped. Such areas should be left in trees.

Baxter cherty silt loam, eroded rolling phase (5 to 12 percent slopes) (BB).—This soil is associated with Bodine and Mountview soils and with other members of its own series. Individual areas are small and are widely distributed throughout the Baxter-Mountview-Greendale-Ennis association.

This well-drained soil has lost 25 to 75 percent of its original surface layer through erosion. The upper layer now is a pale-brown or yellowish-brown friable cherty silt loam that is very low in organic matter. The subsoil consists of yellowish-red to red, moderately firm, cherty silty clay loam. This material overlies red or reddish-brown sticky clay that is moderately plastic and streaked with yellow, gray, and brown.

Cropping has caused erosion and lowered the content of organic matter and plant nutrients. The chert fragments throughout the profile interfere with tillage. Surface runoff and internal drainage are moderate. This soil has good aeration and root penetration. It is strongly to very strongly acid.

Use suitability.—This soil has been cleared and is used for general farm crops or pasture. The main crops are corn, tobacco, and lespedeza. A small acreage lies idle.

Although this soil is suited to a variety of crops, yields are low under average management. With proper amendments, corn, wheat, oats, barley, lespedeza, red clover, orchardgrass, alfalfa, and tobacco can be successfully grown. This soil is moderately easy to work and conserve, but the large amount of chert hinders tillage. Response to improved management is moderately good, but somewhat limited by droughtiness.

Bodine cherty silt loam, steep phase (25 to 60+ percent slopes) (BN).—This soil, the most extensive of the Bodine series, occupies the steepest slopes. It is a light-colored, excessively drained soil derived from cherty limestone (fig. 3). The forest cover consists principally of species of oak and hickory, with some gum, sourwood, yellow-poplar, beech, and dogwood. In places, the undergrowth is huckleberry and mountain-laurel.

This soil occurs in large areas throughout the Bodine-Mountview-Greendale-Ennis association, mainly in the watershed of the Tennessee River. In the highly dissected uplands, it is associated with Baxter, Mountview, Dickson, and Greendale soils and with other members of the Bodine series.

Profile description:

0 to 6 inches, brownish-gray or grayish-brown, friable cherty silt loam; 4 to 6 inches thick.
6 to 16 inches, light yellowish-brown, brownish-yellow, or yellowish-brown, friable cherty silt loam or silty clay loam; 8 to 11 inches thick.
16 to 48 inches +, very cherty silt loam or silty clay loam, splotched with yellow, brown, gray, and red; underlain by cherty limestone at 4 feet or more.

This soil is strongly to very strongly acid and very low in plant nutrients. Although a thin deposit of leaves and forest litter covers the surface, the soil has very low organic-matter content. The soil is permeable to air and moisture but has a very low water-supplying capacity. Surface runoff is very rapid, and internal drainage is rapid. Numerous chert fragments of various sizes occur throughout the profile.

Figure 3.—Thin-bedded chert underlies the Bodine soils.

This soil varies greatly in color, thickness of layers, and chert content. Colluvial chert fragments have accumulated in masses several feet thick at the bases of many slopes. Along the lower part of other slopes, however, the surface soil is deeper because material has washed from higher levels. In those areas where the parent material has been mixed with windblown loess, the texture and chertiness of the soil have been modified to some extent. In other places, a thin chert-free, friable silt loam covers the cherty part of the soil. Bedrock outcrops on some of the lower, steeper slopes. Small areas of Baxter and Mountview soils are mapped with this steep phase of Bodine cherty silt loam.

Use suitability.—The hardwood forest that covers this soil has been cut over several times. The steep slopes, chertiness, low fertility, and very low moisture supply prohibit use of this soil for crops or pasture. If cleared, it would be very difficult to work or conserve. Its practical use is limited to forest or to unimproved pasture.

Bodine cherty silt loam, eroded steep phase (25 to 60 percent slopes) (Bo).—This excessively drained soil has a large amount of chert on the surface and throughout the profile. It occurs in small areas widely distributed throughout the Bodine-Mountview-Greendale-Ennis soil association.

Much of the original surface layer has been lost, from 25 to 75 percent in places. Occasionally, all of the surface soil has been eroded away and the subsoil is exposed. Shallow gullies occur in a few places, but elsewhere, material washed from the upper slopes has accumulated at the base.

The upper 4 or 5 inches is a brownish-gray or yellowish-gray, cherty, friable silt loam. The light yellowish-brown to yellowish-brown subsoil is a friable, cherty silt loam or cherty silty clay loam. Variations in color appear where the plow layer has been mixed with the subsoil during plowing or where materials from the upper slopes have been deposited on the surface. Small areas of Baxter soils are mapped with this soil.

Use suitability.—All of this soil has been cleared, but probably less than 5 percent is in corn, lespedeza, or other farm crops. The rest is idle or in low-grade pasture (fig. 4). Much of the soil is covered with broomsedge, brush, briers, sassafras, and vines.

The steep slopes, chertiness, erodibility, low natural fertility, and strong acidity limit the use of this soil for crops or pasture. It is best suited to trees, but on those farms where crops must be grown, its best use is permanent pasture.

Bodine cherty silt loam, hilly phase (12 to 25 percent slopes) (BL).—This excessively drained soil is associated with other members of the Bodine series and with Baxter and Mountview soils that have similar slopes. It is covered with hickory and post, chestnut, red, white, and blackjack oaks. It is widely distributed, but the largest acreage is in the Bodine-Mountview-Greendale-Ennis association.

This soil has thicker and more distinct layers than Bodine cherty silt loam, steep phase, but its slopes are not so steep. Its surface layer is a brownish-gray to grayish-brown, friable, cherty silt loam. The subsoil is a light yellowish-brown to yellowish-brown, friable, cherty silty

Figure 4.—**A poor pasture on Bodine cherty silt loam, eroded steep phase.**

clay loam or heavy silt loam. At depths of 10 to 18 inches the subsoil is underlain by a substratum of light yellowish-brown silty clay loam variegated with yellow, brown, red, and gray.

The soil is strongly to very strongly acid and is low in organic matter and plant nutrients. Large quantities of angular chert fragments are scattered over the surface and throughout the profile. This soil is permeable to roots, air, and moisture. Surface runoff and internal drainage are rapid, and the water-supplying capacity is low.

Use suitability.—All of this soil is in woodland that has been cut over several times; the stand contains few marketable trees. The suitability of this soil for tilled crops is limited by strong slopes, chertiness, low fertility, and low water-supplying capacity. Cleared areas can be used for pasture, but good management is needed to keep them productive. Because of its many unfavorable properties, this soil is best used for trees.

Bodine cherty silt loam, eroded hilly phase (12 to 25 percent slopes) (Bm).—Areas of this shallow excessively drained soil are comparatively small and are widely scattered in the Bodine-Mountview-Greendale-Ennis association.

As a result of erosion the surface layer varies in depth, but generally it is thinner than that of Bodine cherty silt loam, hilly phase. The surface layer is brownish-gray or yellowish-gray, friable, cherty silt loam. The subsoil is a light yellowish-brown to yellowish-brown, friable, cherty silt loam or silty clay loam, about 10 to 18 inches thick. The subsoil is underlain by materials similar to the surface layer in texture but variegated with shades of brown, gray, yellow, and some red. Some color variations also occur in the plow layer where the thin surface material has been mixed with the subsoil during tillage. The texture of the plow layer also has been altered by tillage.

The soil is strongly to very strongly acid and low in organic matter and plant nutrients. Chert fragments are numerous on the surface and comprise a large part of the profile. Because this soil is porous and friable, it is permeable to air. Roots penetrate into the lower subsoil. The soil does not hold a satisfactory supply of water; internal drainage and surface runoff are rapid. Small areas of Mountview and Baxter soils are mapped with this soil.

Use suitability.—This soil has been cleared of its hardwood forest; most of it is wasteland or in low-grade pasture. Corn, tobacco, and lespedeza are grown on a few small areas, often in fields that lie mostly on adjoining soils.

The usefulness of this soil is limited by its low fertility, strong slopes, chertiness, and erodibility. It is difficult to work and to conserve. The cherty material limits the use of heavy farm machinery, and the strong slopes are hard to till.

Pasture plants do not thrive on this soil because it holds too little moisture. Even with adequate rainfall and high levels of management, poor yields can be expected. This soil is therefore best used for forest.

Bodine cherty silt loam, rolling phase (5 to 12 percent slopes) (Bh).—This soil occurs on narrow ridge crests, chiefly in strongly dissected uplands. The crests of the ridges and spurs typically range from nearly level to irregularly sloping and rolling.

This excessively drained soil has a milder slope than the other Bodine soils. Associated soils on adjoining slopes are chiefly other members of the Bodine series. Mountview and Dickson soils occur on the broader parts of the ridge crests.

This soil has developed from materials weathered from chert or very cherty limestone. Development took place under a mixed hardwood forest. The present cover consists mainly of oaks and hickories. Although the soil is distributed throughout the county, the largest acreage is in the Bodine-Mountview-Greendale-Ennis association.

Profile description:

0 to 6 inches, brownish-gray to grayish-brown, porous, very cherty silt loam; low in organic matter; 4 to 6 inches thick.
6 to 18 inches, light yellowish-brown to yellowish-brown, friable, cherty light silty clay loam, faintly splotched with gray and red in places; contains variable amounts of cherty fragments; 10 to 15 inches thick.
18 to 48 inches +, mottled yellow, brown, and gray silty clay loam; contains some angular chert fragments; beds of chert or cherty limestone extend to considerable depth.

A thin layer of forest litter and leaves covers this soil, and in wooded areas the dark-stained organic matter extends downward for an inch or two. In places angular chert fragments almost cover the surface layer. The fragments, from less than 1 inch to more than 8 inches in size, are so numerous they interfere with tillage.

The soil is strongly to very strongly acid and low in organic matter and plant nutrients. It is permeable to roots, air, and water. Although rain penetrates easily, little water is retained. Surface runoff is medium, and internal drainage is rapid.

Use suitability.—All of this soil is in cutover forest, but the trees are small and of poor quality. When cleared, the soil is poor for crops because of chertiness, low fertility, and low moisture-holding capacity. The soil occurs on narrow ridges and is associated with cherty steep soils that are not adapted to agriculture. Many areas are

isolated or inaccessible, so clearing and cultivating is not economically feasible. Under a high level of management, only fair crop yields can be expected. The soil is better for pasture than crops, but its droughtiness causes low pasture yields in dry seasons. Unless the demand for crops or pasture is urgent, this soil should be kept in woods.

Bodine cherty silt loam, eroded rolling phase (5 to 12 percent slopes) (BK).—This soil occupies narrow ridgetops in strongly dissected cherty limestone areas. It is widely distributed throughout the county in association with Mountview soils and other Bodine soils.

The surface layer is brownish-gray to yellowish-gray cherty, friable silt loam. The subsoil is light yellowish-brown to yellowish-brown, friable, cherty silty clay loam. Below 10 to 20 inches the subsoil is underlain by cherty silty clay loam, mottled with gray, yellow, and brown.

Minor variations in color and thickness of soil are common in all areas. Erosion has caused a moderate loss of surface material, and under cultivation the top layer is mixed with the subsoil. In a few small areas all the upper horizon is gone and the subsoil is exposed.

Numerous cherty fragments are scattered over the surface and throughout the profile. The soil is strongly to very strongly acid and low in organic matter, plant nutrients, and water-holding capacity. It is very permeable, and internal drainage is rapid. Roots and air penetrate easily.

Use suitability.—Although this soil was once cleared, only a small acreage is now in crops or pasture. The idle areas are covered with weeds, brush, and a few small seedling trees. Though some soil is in permanent pasture, the yields are poor.

This soil is capable of producing tilled crops, but yields are very low because of its chertiness, low natural fertility, and poor water-supplying capacity. The high chert content hinders tillage, and the response to fertilizers and other good management is limited by droughtiness.

On most farms this soil is best suited to pasture. Yields of forage may be low during dry periods in summer and fall, even under good management.

Briensburg silt loam (2 to 5 percent slopes) (BP).—This imperfectly drained soil consists of colluvial-alluvial materials. It occurs on gently sloping colluvial fans of small streams which emerge onto large flood plains, on gently sloping areas at the base of upland slopes, or along narrow, gently sloping drainageways. It is associated with Dickson and Mountview soils, and much of its parent material was washed from those soils. The forest cover consists chiefly of oaks and hickory, with some beech, tulip-poplar, sweetgum, and maple. This soil is mainly in the central part of the county in the Dickson-Mountview-Briensburg association.

Profile description:

0 to 12 inches, grayish-brown or brown, mellow, friable silt loam; 10 to 15 inches thick.
12 to 26 inches, brownish-gray or light-brown, friable silt loam; contains a moderate quantity of light-gray and strong-brown mottles and a few iron concretions; 12 to 15 inches thick.
26 to 48 inches +, light-gray, friable to moderately compact silt loam, splotched and streaked with strong brown; contains a large quantity of iron concretions; 2 to 5 feet or more thick.

This soil is strongly to very strongly acid. The supply of organic matter is variable, but in most places it is moderately high. Supplies of plant nutrients are moderate to low. Plant roots are confined mostly to the layer above the mottled zone. Air and water circulation is adequate in the upper soil but very slow in the subsoil. The lower subsoil is only slightly permeable in most places. Surface runoff and internal drainage are slow. The soil is reasonably free of stones and gravel but in places contains a small amount of chert.

Use suitability.—About 5 percent of Briensburg silt loam is wooded. Most of the cleared areas are farmed with adjoining soils. A small acreage is in pasture.

This moderately productive soil is easy to work, to conserve, and to keep in good tilth. Its use suitability is limited somewhat by unfavorable internal drainage.

Corn, lespedeza, tobacco, wheat, soybeans, red clover, alsike clover, white clover, and grasses will grow satisfactorily if properly managed. Alfalfa and fruit trees are not well suited. Since it occurs in small areas in association with Mountview and Dickson soils, this soil is used in the same manner as those soils. Although it is suitable for intensive cropping, amendments are necessary to maintain its productivity.

Bruno loamy fine sand (0 to 3 percent slopes) (BR).—This brown, well-drained to excessively drained sandy soil occurs on stream bottoms. The parent material is mixed alluvium washed from upland soils underlain by sandy and cherty limestone. The soil has developed under a hardwood forest of oak, elm, beech, maple, and sycamore.

The soil occurs as small, narrow bands adjacent to stream channels. It has a small total acreage and is not an important soil in this county. It is widely distributed along several creeks and the Tennessee River. It is associated with the Ennis soils.

Profile description:

0 to 10 inches, grayish-brown or brown, loose, very friable loamy fine sand or loamy sand; 8 to 12 inches thick.
10 to 30 inches, brown or yellowish-brown very friable fine sandy loam or loamy fine sand; 10 to 40 inches thick.
30 inches +, stratified sand, silt, and gravel; 5 feet or more thick.

The soil is slightly to medium acid, moderately low in organic matter, and very permeable to air, moisture, and roots. It absorbs moisture rapidly but, because internal drainage is rapid, its water-holding capacity is moderately low.

The texture varies in the upper part of the soil; a complex of loamy sand, sandy loam, fine sandy loam, and loam textures occurs. Interstratification of silt and sandy material is common in the subsoil. In places the profile consists of brown loam or fine sandy loam, 6 to 10 inches thick, underlain by layers of brown stratified silt that contain an occasional thin stratum of loamy fine sand.

Use suitability.—All areas mapped along the Tennessee River were flooded by Kentucky Reservoir. In the creek valleys, where about half of this soil has been cleared, corn is the chief crop. The crops may be injured during summer because of the droughtiness of the soil.

Bruno loamy fine sand is moderately easy to work and conserve. The gentle slopes favor use of all types of farm machinery, but the loose surface layer makes tractor farming difficult. Humus and plant nutrients are deposited by floodwaters, but flooding restricts the use of the soil to

annual summer crops. This soil responds to good management, but high yields are difficult to maintain.

Dickson silt loam, undulating phase (2 to 5 percent slopes) (DA).—This moderately well drained siltpan soil of the uplands was derived from a thin layer of windblown silt. The silt, 24 to 42 inches thick, is underlain by cherty limestone material. The original forest consists mainly of red, blackjack, white, post, and chestnut oaks, hickory, and scattered growths of maple, sweetgum, dogwood, and yellow-poplar.

The soil is largely confined to the broad, level upland areas in the Dickson-Mountview-Briensburg association. Small acreages are on the broader ridge crests throughout the county. The soil is closely associated with Mountview, Bodine, Baxter, and Briensburg soils. In most places, the individual areas are fairly large.

Profile description:

0 to 8 inches, brownish-gray to light yellowish-brown very friable silt loam; very weak, fine to medium crumb structure; 7 to 12 inches thick.
8 to 18 inches, yellow-brown friable heavy silt loam to silty clay loam; moderate medium blocky structure; 10 to 14 inches thick.
18 to 24 inches, yellowish-brown to brownish-yellow, friable, light silty clay loam; faintly splotched with gray and strong brown in lower part; weak medium blocky structure; 6 to 10 inches thick.
24 to 34 inches, mottled gray, yellow, and brown compact silt loam or silty clay loam; moderate coarse blocky structure; 8 to 14 inches thick.
34 inches +, yellowish-brown to brownish-yellow cherty silty clay loam splotched with gray and strong brown.

This soil is medium to strongly acid and low in organic matter and plant nutrients. The upper part is permeable to air, roots, and water, but the siltpan is only slightly so. Surface runoff is slow, and internal drainage is slow to moderate. The soil has a medium water-supplying capacity. The surface soil and subsoil are free of chert fragments, but in some places a few occur in the siltpan. The material below the siltpan is very cherty.

Use suitability.—Nearly all of this soil is in oak and hickory forest. The trees grow slowly and are of poor quality. A few small recently cleared areas are used for corn and lespedeza.

This soil is suitable for a wide variety of crops, but because of its low fertility and limited water-supplying capacity, it is only moderately productive. Under good management, however, most of the common field crops, except alfalfa, can be grown successfully. Amendments should be used liberally if high yields are to be maintained.

Dickson silt loam, eroded undulating phase (2 to 5 percent slopes) (DB).—This soil is more eroded than Dickson silt loam, undulating phase. Much of the original surface layer, including that part high in organic matter, has been lost. The plow layer consists largely of the original surface layer mixed in places with the subsoil. The subsoil is exposed in a few small severely eroded spots. The soil occupies broad ridge crests, mainly in the Dickson-Mountview-Briensburg association. Some areas, however, are on the broader ridge crests in the Baxter-Mountview-Greendale-Ennis and the Bodine-Mountview-Greendale-Ennis associations.

The present surface layer is a brownish-gray to yellowish-brown friable silt loam. The subsoil is yellowish-brown to brownish-yellow, friable, heavy silt loam or silty clay loam.

A small acreage of somewhat poorly drained Lawrence silt loam, a soil not mapped separately in the county, is included with this moderately well drained soil. Lawrence silt loam has a more yellowish subsoil and a thicker more compact siltpan and is less suited to the crops commonly grown. Its use and management is somewhat similar to that of Dickson silt loam, eroded undulating phase.

Use suitability.—All of this soil has been cleared. About 60 percent is cultivated; 10 percent is in permanent pasture; and 30 percent is wasteland or lies idle.

The soil is fairly well suited to most crops commonly grown. It is low in plant nutrients and moderately low in water-supplying capacity. Consequently, crop yields are moderate. Fertilizers are required for most crops and are essential for others if satisfactory yields are to be obtained. Alfalfa, even under a high level of management, does not yield well. Sericea lespedeza, however, is grown successfully with little or no fertilizer. This soil is better suited to small grains than to corn or other crops that mature late in summer or in fall.

Dickson silt loam, rolling phase (5 to 12 percent slopes) (DC).—This moderately well drained soil has formed under a forest cover of oaks and hickory. It is slightly better drained than the undulating phase of Dickson silt loam, has a thinner less compact siltpan, and was derived from a thinner layer of silt.

The surface layer is brownish-gray to light yellowish-brown very friable silt loam. The subsoil is yellowish-brown to brownish-yellow, friable, heavy silt loam or silty clay loam.

The soil occurs on ridge slopes in the Dickson-Mountview-Briensburg association and on narrow ridge crests in other areas. It is closely associated with Mountview, Baxter, and Bodine soils.

The soil is medium to strongly acid, low in organic matter and plant nutrients, and low in water-supplying capacity. The upper profile is permeable to air, roots, and water, but the siltpan is only slightly permeable. The surface layer and subsoil are free of chert, but the siltpan is generally cherty, and the material below it is very cherty. Surface runoff is medium, and internal drainage is slow to moderate.

Use suitability.—The forest covering most of this soil consists mainly of post, blackjack, red, and white oaks. The timber grows slowly, however, and is of poor quality. Because of its stronger slopes, this soil is not so good for crops as Dickson silt loam, undulating phase, although various crops can be grown. Fertility is low, and amendments should be added to obtain satisfactory yields. Close-growing crops should be included in a rotation to counteract the erodibility of this soil.

Much of this soil is on narrow ridge crests surrounded by steep Bodine and Baxter soils that are not suited to crops because they are inaccessible.

Dickson silt loam, eroded rolling phase (5 to 12 percent slopes) (DD).—This moderately well drained soil has lost much of its original surface layer. The part remaining has become mixed with the upper subsoil. The mixing with the subsoil has not affected the texture of the surface layer, but its color ranges from brownish gray to yellowish brown. The subsoil is a yellowish-brown to

brownish-yellow, friable, heavy silt loam to silty clay loam. Some small severely eroded areas are included; they are conspicuous because of the shallow gullies and exposed subsoil. The texture of the more eroded spots is a silty clay loam.

Use suitability.—All of this soil has been cleared; about 25 percent is in farm crops, 50 percent is in pasture, and 25 percent is idle.

Many kinds of crops can be grown, but the yields are low unless amendments are applied. This soil is easy to work but difficult to conserve. Erodibility, combined with low fertility, limits the kinds of crops that can be grown successfully and the rotations that can be used.

Egam silty clay loam (0 to 3 percent slopes) (Ea).—This dark-colored, moderately well drained soil of the first bottoms along the Tennessee River is now flooded by Kentucky Reservoir. About 20 acres remain above water. The soil formed on nearly level flood plains under a hardwood forest. The parent material was mixed alluvium that washed chiefly from uplands underlain by limestone materials. The soil was deposited on the high first bottoms or in slack water areas on the low first bottoms. The soil was darker than the Huntington soil, heavier in texture, and much less productive. It was closely associated with Huntington, Lindside, Melvin, Bruno, and Wolftever soils. Practically all of it was cleared and used for crops.

Profile description:

0 to 12 inches, dark-brown to dark grayish-brown moderately firm silty clay loam; 8 to 18 inches thick.
12 to 30 inches, dark grayish-brown to dark yellowish-brown moderately compact silty clay loam to silty clay; 15 to 25 inches thick.
30 inches +, grayish-brown moderately friable silty clay loam, faintly splotched with gray; 5 feet or more thick.

This soil contained a moderate amount of organic matter, had a reasonably large supply of plant nutrients, and was moderately low in water-supplying capacity. It was medium to slightly acid. Surface runoff was very slow, and internal drainage was slow. The soil was moderately to slightly permeable to air, roots, and water.

Ennis silt loam (0 to 3 percent slopes) (Ec).—This brown, well-drained, friable soil occurs on first bottoms. The material from which it has formed washed almost entirely from uplands underlain by cherty limestone. Some loess is included in most places. The soil is on nearly level flood plains, and the forests include hickory, elm, beech, sweetgum, maple, sycamore, and oak.

This soil lies along the larger creeks in all parts of the county, largely along Yellow, Whiteoak, and Cane Creeks. It is closely associated with Lobelville and Melvin soils on the flood plains, and with Humphreys, Taft, and Robertsville soils on the adjoining low terraces. The individual areas are long and narrow and are associated with areas of Humphreys and Greendale soils in most places.

Profile description:

0 to 12 inches, brown, grayish-brown, or dark-brown very friable silt loam; 8 to 15 inches thick.
12 to 40 inches, brown friable silt loam; 20 to 40 inches thick.
40 inches +, brown or yellowish-brown friable silt loam to heavy silt loam, stratified with thin beds of fine sandy loam, loamy sand, or gravel; 5 feet or more thick.

The surface layer varies from slightly acid to medium acid; the subsoil is medium to strongly acid. The soil is moderately high in organic matter and plant nutrients and has a very high water-supplying capacity. All parts of the profile are permeable to roots, air, and water. Surface runoff is very slow, and internal drainage is moderate. Waterworn chert occurs on the surface and throughout the profile in places, but it seldom interferes with cultivation. Although the quantity of chert is highly variable in the lower layers, in a few places the water supply is lowered by the presence of loose beds of chert at shallow depths.

Use suitability.—Nearly all of this soil is cleared and used for crops or pasture. Fringes of trees border the streambanks or cover the narrow strips of the low first bottoms adjacent to the stream channel. Some areas have been covered by Kentucky Reservoir.

Ennis silt loam is susceptible to flooding so that its use suitability is generally limited to summer annuals such as corn, lespedeza, soybeans, and peanuts. On those areas that remain under water for a longer time than others, some risk is involved in growing winter or perennial crops. Small grains can be grown successfully in places.

This soil is easy to work and very easy to conserve. It can be tilled under a wide range of moisture content. It is susceptible to scouring or to deposition of sandy or gravelly material by floodwaters. Ordinarily the sediments added are high in plant nutrients and organic matter.

Ennis cherty silt loam (0 to 3 percent slopes) (Eb).—This well-drained, brown, cherty soil of the first bottoms has formed from alluvium washed mainly from uplands underlain by cherty limestone. Its high content of chert fragments interferes with tillage. In most places, however, a small amount of windblown silt is included in the parent material. The soil contains more chert than Ennis silt loam and is also lower in water-supplying capacity and in content of organic matter and plant nutrients. The surface soil is brown or grayish-brown, cherty, very friable silt loam; the subsoil is brown, friable, cherty silt loam.

Ennis cherty silt loam occurs along streams in association with Humphreys, Greendale, Baxter, and Bodine soils. Most of the acreage is on small, narrow, flood plains. The individual fields include Humphreys and Greendale soils.

Use suitability.—About half of this soil has been cleared and used for tilled crops or pasture. A larger part, probably 50 percent of the cleared area, is used for pasture than is used on Ennis silt loam.

Ennis cherty silt loam is well suited to corn, peanuts, lespedeza, and many summer annual forage crops. Some risk is involved in growing winter or perennial crops such as alfalfa, red clover, or small grains, because of periodic flooding in winter and spring. These crops can be grown successfully, however, on areas where the floods are of short duration. This soil is moderately easy to work and very easy to conserve.

Greendale cherty silt loam, undulating phase (2 to 5 percent slopes) (Ga).—This soil of the colluvial foot slopes is moderately well drained to well drained. It consists of alluvium or colluvium washed or rolled mainly from the adjacent Bodine or Baxter soils. The parent material consists primarily of cherty limestone mixed

with a small amount of loess in places. The soil has formed under a forest of oak and hickory that includes some walnut, beech, yellow-poplar, and maple.

This soil is on gently sloping alluvial-colluvial fans formed by small streams emerging onto the flood plains of larger streams, on narrow bottoms along deeply entrenched stream beds, or on narrow sloping areas at the foot of steep slopes. It is widely distributed in small areas throughout the county in close association with Bodine, Baxter, Humphreys, and Ennis soils.

Profile description:

0 to 12 inches, grayish-brown to brown, gritty, friable, cherty silt loam; 8 to 14 inches thick.
12 to 24 inches, light yellowish-brown to yellowish-brown, gritty, friable, cherty to very cherty silt loam; 10 to 15 inches thick.
24 inches +, brown to brownish-yellow, gritty, cherty to very cherty silt loam splotched with gray; 5 feet or more thick.

Numerous chert fragments that range from less than 1 inch to 8 inches in diameter make up to 25 to 50 percent of the soil mass. Enough chert is present in the plow layer to interfere with tillage. The soil is medium to strongly acid and moderately well supplied with organic matter and plant nutrients. It is porous and permeable to air, roots, and water. Surface runoff is slow, and internal drainage is moderate to rapid. The water-supplying capacity is medium to high.

Although practically all areas contain some chert, a few are included that are as much as 75 percent chert. On these areas tillage is practically prohibited. Seepage from adjacent uplands affects this soil in some places. These seeped areas are lighter in color and more mottled near the surface than the better drained areas. A few areas of Briensburg and Tigrett silt loams, too small to be mapped separately, are included with this soil.

Use suitability.—About 65 percent of this soil is woodland. The cleared areas are used for many kinds of crops and for pasture. Many farmsteads are located on this soil.

This soil is well suited to moderately intensive use for corn, lespedeza, tobacco, small grains, and soybeans. Alfalfa and red clover do well when proper amendments are used. Good drainage and aeration make this soil well suited to pasture and early vegetable crops. Field crops, especially corn, are susceptible to injury from drought. This soil is easy to conserve and to work.

Much of this soil is in long, narrow strips surrounded by steep wooded upland soils that are not suited to crops. These areas are inaccessible and too shaded for good crop growth. They are also more cherty than the average Greendale soil. On many farms this soil is best used as woodland.

Humphreys silt loam (1 to 5 percent slopes) (HB).—This brown, well-drained soil lies on low terraces. The parent alluvium was washed from uplands underlain by cherty limestone; it also contains a small amount of loess. The original cover consisted of red and white oaks, hickory, yellow-poplar, beach, and maple. The moderate-sized areas are along the larger creeks. The largest areas are along Whiteoak, Yellow, Wells, and Cane Creeks. This soil is closely associated with Ennis, Greendale, Mountview, Baxter, and Bodine soils.

Profile description:

0 to 10 inches, grayish-brown or brown, very friable silt loam; weak medium crumb structure; 6 to 12 inches thick.
10 to 30 inches, brown to dark yellowish-brown, friable, heavy silt loam or silty clay loam; weak to moderate medium blocky structure; 14 to 24 inches thick.
30 inches +, brown, yellowish-brown, or brownish-yellow, friable, heavy silt loam or silty clay loam; gray and strong brown mottles increase with depth; 2 feet or more thick.

The soil is medium to strongly acid and moderate in organic matter and plant nutrients. It is permeable to air, moisture, and roots; the water-supplying capacity is high. Small quantities of chert fragments occur on the surface and throughout the soil. They interfere with tillage only in very small areas. The lower horizons are quite cherty in places.

The soil is slightly to moderately eroded, and in many places much of the surface layer has been lost. Areas of Humphreys cherty silt loam too small to be mapped separately are included with this soil, as well as a few long, narrow swales of Ennis silt loam that lie within the terraces.

Use suitability.—Nearly all of this soil has been cleared and is now used for crops or pasture. Kentucky Reservoir covers some areas along Whiteoak, Cane, and Hurricane Creeks.

This is one of the best agricultural soils in the county because of its favorable slopes, ability to hold water, content of available plant nutrients, and responsiveness to good management. It can be used intensively because it is easy to till and to conserve. Corn, peanuts, soybeans, lespedeza, red clover, and alfalfa can be grown successfully, though amendments are necessary for good yields of red clover and alfalfa. Crops yield fairly well without commercial fertilizers but respond exceptionally well if they are properly fertilized.

Humphreys cherty silt loam (1 to 5 percent slopes) (HA).—This well-drained soil differs from Humphreys silt loam in that it has a larger quantity of chert on the surface and throughout the profile, is less fertile, and has a lower water-supplying capacity. The grayish-brown, brown, or pale-brown surface layer is a very friable cherty silt loam. The subsoil is a brown to dark yellowish-brown, friable, cherty, heavy silt loam or silty clay loam.

This soil occurs in small to medium-sized areas along most streams in association with Ennis, Paden, Pickwick, Greendale, Bodine, and Baxter soils. It is medium to strongly acid throughout and has a medium content of organic matter and plant nutrients. It is extremely permeable to air, roots, and moisture. Surface runoff is slow, and internal drainage is moderate to rapid. The water-supplying capacity is moderately low. The plow layer contains enough chert to interfere with cultivation. The chert fragments range from ½ inch to 6 inches across and make up about 25 to 50 percent of the soil mass.

Use suitability.—About 95 percent of this soil is used for crops and pasture.

This soil is suited to practically all crops common to the county. Although numerous chert fragments in the plow layer interfere with tillage, most types of heavy farm machinery can be used.

Crop yields are generally low because the soil is only moderately fertile and is moderately low in water-sup-

plying capacity. Amendments are necessary for the production of alfalfa and red clover and greatly increase the yields of other crops. The soil is easy to conserve and can be worked under a wide range of moisture conditions.

Huntington silt loam (0 to 3 percent slopes) (Hc).—All of this soil is covered by Kentucky Reservoir. Before flooding, however, it was used intensively for crops. It was a well-drained, brown, highly productive soil of the first bottoms that had formed from recent alluvium. Although the alluvium was highly mixed, it had washed chiefly from uplands underlain by moderately high grade limestone materials. The soil developed on nearly level flood plains under a hardwood forest.

Huntington silt loam occurred on long, narrow strips and was closely associated with Egam, Bruno, Lindside, Melvin, and Wolftever soils on the Tennessee River flood plains.

Profile description:

0 to 12 inches, brown or dark-brown friable silt loam; 6 to 18 inches thick.
12 to 30 inches, brown or light-brown friable heavy silt loam to silty clay loam; 10 to 30 inches thick.
30 inches +, light-brown to dark yellowish-brown friable silt loam, splotched with gray in places; occasionally interbedded with sandy material; 2 to 20 feet thick.

Huntington silt loam was slightly acid to neutral, high in organic matter and plant nutrients, and very high in water-supplying capacity. It was moderately permeable to air, roots, and water. Surface runoff was very slow to slow, and internal drainage was moderate. A small acreage of sandy material was mapped with this soil.

Lindside silt loam (0 to 3 percent slopes) (La).—This soil is now covered by Kentucky Reservoir. Prior to flooding, it was used intensively for corn and other annual crops.

The soil was imperfectly drained and occurred on nearly level or slightly depressed first bottoms. It consisted of mixed alluvium washed chiefly from uplands underlain by limestone materials. Drainage and related characteristics were intermediate between those of the well-drained Huntington and the poorly drained Melvin soils. Lindside silt loam occupied long narrow areas along the Tennessee River in association with Huntington, Melvin, and Wolftever soils.

Profile description:

0 to 14 inches, brown to grayish-brown friable silt loam; 10 to 18 inches thick.
14 to 24 inches, brownish-gray to grayish-brown friable heavy silt loam, mottled with gray and strong brown; 8 to 20 inches thick.
24 inches +, moderately friable, heavy silt loam or silty clay loam, mottled with gray, yellow, or brown; 5 feet thick, or more.

The soil was medium to slightly acid, moderately high in plant nutrients and organic matter, and very high in water-supplying capacity. Although this soil was permeable throughout, the lower layers were saturated and poorly aerated much of the time. Surface runoff was very slow, and internal drainage was slow.

Some areas with a silty clay loam surface soil, and a few that were poorly drained and had a gray surface layer, were included with Lindside silt loam. Because of limited acreage, they were not mapped separately.

Lobelville silt loam (0 to 3 percent slopes) (Lc).—This imperfectly drained soil of the first bottoms was formed from alluvium. The parent material was washed from uplands underlain chiefly by cherty limestones, but it included some loess in most places. The soil occurs on nearly level flood plains and has developed under a forest cover of willow, sweetgum, sycamore, maple, hickory, and willow and water oaks. The soil occupies small, narrow areas along large streams and is associated with Ennis soils of the bottom lands, Greendale soils of the colluvial lands, and Bodine, Mountview, and Dickson soils of the uplands.

Profile description:

0 to 14 inches, brown, grayish-brown, or brownish-gray very friable silt loam; 8 to 18 inches thick.
14 to 24 inches, grayish-brown, light yellowish-brown, or brownish-gray friable silt loam or heavy silt loam, splotched with gray and strong brown; 8 to 12 inches thick.
24 inches +, gray or light-gray, moderately friable silt loam, splotched with strong brown; contains few to many concretions mixed with a large amount of chert gravel in most places; 2 to 5 feet thick, or more.

In many places chert fragments are scattered in the upper profile, but they do not much interfere with cultivation. In most places the lower layers are very cherty, but in some they are quite variable in content of chert. The soil is strongly to very strongly acid and moderately low in organic matter and plant nutrients. It is permeable throughout. The lower layers are saturated with water and poorly aerated much of the time. Surface runoff and internal drainage are very slow, but the water-supplying capacity is very high.

Use suitability.—Nearly all of this soil is used for crops or pasture; a small acreage is idle.

Although this soil is physically suited to crops, periodic flooding and poor drainage limit its use. The drainage is normally adequate for corn and sorghum and for lespedeza and other hay and pasture crops, but occasional crop failures can be expected. Average yields might be increased by artificial drainage, but the soil would remain subject to flooding.

Lobelville cherty silt loam (0 to 3 percent slopes) (Lb).—This cherty, imperfectly drained soil of the first bottoms has waterworn chert fragments in the plow layer that interfere with tillage. It occurs in small, widely distributed areas, chiefly along the larger streams. It is closely associated with the Ennis, Humphreys, and Greendale soils.

The surface layer is a brown, grayish-brown, or brownish-gray very friable silt loam. The subsoil is grayish-brown to light yellowish-brown friable silt loam or heavy silt loam, splotched with gray or strong brown.

Use suitability.—Most of this soil is wooded and a small acreage is pastured; the rest is idle. Only small areas are used for crops. The soil has about the same range of use suitability as Lobelville silt loam, but it is more difficult to till and contains less plant nutrients and organic matter. Its use is limited largely to growing of corn, lespedeza, and sorghum and other summer annual forage plants.

Maury silt loam, eroded rolling shallow phase (5 to 15 percent slopes) (Ma).—This brown, well-drained, soil of the uplands has formed chiefly from materials weathered from phosphatic interbedded siltstone, sandstone, and

limestone. The parent material was influencd or modified by materials from shaly limestone, high-grade limestone, and dolomite, all more or less phosphatic. The areas on the more gentle slopes were also influenced by windblown silt. The soil was formed under a mixed hardwood forest of oaks, hickory, maple, beech, yellow-poplar, black locust, and walnut. It is confined to small areas in the basin of Wells Creek, where it is associated mainly with Mercer, Talbott, and Ennis soils.

Profile description:

0 to 8 inches, brown to dark-brown, friable, gritty silt loam; moderate medium crumb structure; 6 to 10 inches thick.
8 to 12 inches, brown or dark yellowish-brown, friable, heavy silt loam; weak medium crumb structure; 3 to 5 inches thick.
12 to 24 inches, strong-brown or yellowish-brown, moderately firm silty clay loam or silty clay; moderate medium blocky structure; 10 to 15 inches thick.
24 to 36 inches +, yellowish-brown to yellowish-red, moderately friable silty clay loam or silty clay; contains moderate to large amounts of partially weathered limestone and sandy siltstone; extends to bedrock, which is at depths of 3 to 6 feet.

The soil is slightly to medium acid and relatively high in organic matter and plant nutrients. It is especially high in phosphorus. The soil is permeable to air, roots, and moisture and has a moderate water-supplying capacity. Surface runoff is medium to rapid, and internal drainage is moderate. Small- to medium-sized stone fragments on the surface and throughout the profile interfere with tillage.

The soil is from 2 to 6 feet or more in depth to bedrock. The lower subsoil, in places, is splotched with gray and yellow. Much of the original surface layer has been lost through erosion. Because of their small acreage, a few short slopes as steep as 25 percent have been included. The texture of the surface layer ranges from silt loam to very fine sandy loam, and the subsoil from friable silty clay loam to moderately firm or firm silty clay.

Use suitability.—All of this soil has been cleared, and about 70 percent is now used for field crops; the rest is in pasture. This soil is well suited to corn, small grains, lespedeza, red clover, and alfalfa but is better suited to permanent pasture. It is susceptible to erosion if used for intertilled crops. If tilled crops are to be grown, moderately long rotations that include close-growing crops should be used. Lime and potassium will be necessary for alfalfa and red clover, but the phosphorus content is usually adequate for all crops.

Melvin silt loam (0 to 3 percent slopes) (MB).—This poorly drained, gray soil of the bottom lands was formed from highly mixed alluvium washed from uplands underlain by many kinds of rocks, among which limestone predominated. The native cover was largely of water-tolerant trees, as willow, willow oak, and cypress. The soil occurs in long, narrow, depressions or sloughlike areas on the flood plain of the Tennessee River and along large creeks. Along the creeks, the soil is from alluvium washed largely from cherty limestone. Melvin silt loam is associated with Ennis, Lobelville, and Humphreys soils.

Profile description:

0 to 8 inches, gray, light-gray, or brownish-gray, friable silt loam; contains a few strong-brown splotches; 6 to 10 inches thick.
8 to 28 inches, light-gray, moderately friable silt loam or heavy silt loam, splotched with strong brown; contains a few dark-colored concretions; 16 to 22 inches thick.
28 inches +, light-gray, slightly compact silt loam or silty clay loam, mottled with gray and strong brown; 3 to 10 feet thick.

The soil is slightly acid to alkaline in the upper part, but the subsoil is medium to slightly acid. It is moderately well supplied with organic matter and plant nutrients and is very high in water-supplying capacity. Plant roots are generally confined to the upper layers, as the lower part is saturated with water and poorly aerated most of the time. Surface runoff and internal drainage are very slow.

Included with Melvin silt loam is a small acreage that is from alluvium washed chiefly from cherty limestone materials. This inclusion is slightly lighter in texture and has some chert fragments throughout the profile, but the two soils can be used and managed alike.

A small acreage of Melvin silt loam is underlain by alternate beds of cherty gravel and silty material. It has a cherty silt loam texture. Where Melvin silt loam is saturated by seepage from the adjacent slopes, enough calcareous material is deposited to keep it alkaline.

Use suitability.—More than half of Melvin silt loam is now covered by Kentucky Reservoir. Outside the lake area, most of this soil is used largely for pasture. Some hay is grown, and a small part is used for corn or sorghum.

Although not suited to tilled crops, this soil is fairly well suited to such pasture plants as redtop, white clover, and alsike clover. Sorghum and soybeans do reasonably well. If this soil were drained, corn, sorghum, and hay would be moderately productive, but its use would be limited by floods. The soil is permeable throughout and should drain well.

Mercer silt loam, eroded rolling phase (4 to 16 percent slopes) (MC).—This yellow phosphatic soil of the uplands has developed from materials weathered from underlying, thin-bedded shale and phosphatic limestone. The native cover consisted principally of oak and hickory, with which there was some beech, black locust, and walnut.

This moderately well drained, inextensive soil is confined to the basin of Wells Creek. It is closely associated with Maury, Talbott, Pickwick, and Ennis soils.

Profile description:

0 to 6 inches, brown or grayish-brown friable silt loam or heavy silt loam; 4 to 8 inches thick.
6 to 12 inches, brownish-yellow, moderately firm silty clay loam; contains a few faintly developed strong brown and gray splotches; 4 to 8 inches thick.
12 to 22 inches, brownish-yellow or yellowish-brown moderately firm to firm silty clay loam or silty clay, splotched in lower part with gray, yellow, and brown; plastic when wet, hard when dry; contains a few small dark-colored concretions; 8 to 15 inches thick.
22 inches +, yellow, plastic clay with light-gray splotches; contains partially weathered white shale fragments; shaly limestone or interbedded limestone and shale at 5 to 6 feet.

This soil is medium to strongly acid throughout the profile. It is low in organic matter but is well supplied with minerals, especially phosphorus. It is generally free of stone, although small shale fragments occur in the lower subsoil. The slightly permeable subsoil has poor aeration so that root penetration and water percolation are restricted. Surface runoff is rapid, internal drainage is slow, and the water-supplying capacity is low.

Practically all of this soil has been eroded to some extent. From 25 to 75 percent of the original surface layer has been lost. Gullies have penetrated the subsoil in some areas. Small severely eroded spots are common; they are conspicuous because the subsoil is exposed. The surface layer varies in texture and color where the subsoil has been mixed with the topsoil during plowing.

Use suitability.—All of this soil has been cleared; about 60 percent is used for crops and the rest for pasture. It is fairly well suited to corn, small grains, lespedeza, tobacco, red clover, and alfalfa, but the extreme erodibility of this soil limits its use for intensive cropping. It is moderately easy to till but moderately difficult to keep productive. Most types of farm machinery can be used on the mild slopes.

Minvale cherty silt loam, eroded rolling phase (5 to 12 percent slopes) (MD).—This red, well-drained soil lies on colluvial foot slopes. The parent material has washed or rolled mainly from Baxter soils. The soil formed under a forest of oak and hickory mixed with tulip-poplar, maple, beech, sweetgum, and walnut. Baxter, Bodine, and Mountview soils of the uplands; Pickwick, Paden, and Greendale soils of the colluvial lands; and Ennis and Lobelville soils of the bottom lands are closely associated with this soil. Individual areas of this soil are small and widely distributed, largely along Wells, Guices, and Yellow Creeks.

Profile description:

0 to 8 inches, grayish-brown to pale-brown very friable cherty silt loam.
8 to 16 inches, yellowish-brown to brownish-yellow, friable, heavy, cherty silt loam.
16 to 36 inches, reddish-yellow to yellowish-red, friable, cherty silty clay loam; moderate medium blocky structure.
36 inches +, reddish-yellow or yellowish-red, friable, cherty silty clay loam, splotched and streaked with yellow and gray.

This soil is medium in organic-matter content, in supply of plant nutrients, and in water-supplying capacity. It is medium to strongly acid and is readily permeable to air, roots, and water. Surface runoff is slow, and internal drainage is moderate.

Use suitability.—Most of this soil has been cleared and is used intensively for crops. It is well suited to all crops that are commonly grown in the county. Amendments will be necessary, however, for continued high yields, particularly of alfalfa and red clover. The soil is moderately easy to work and conserve. The fields are small, but most farm machinery can be used on these slopes. This soil responds to good management, and with proper care high crop and pasture yields can be expected.

Mountview silt loam, undulating phase (2 to 5 percent slopes) (ME).—This well-drained, yellowish-brown, silty soil of the uplands was formed from a thin layer of windblown silt underlain by cherty limestone material (fig. 5). The upland forest consists predominantly of oaks and hickory, with which there are some maple, beech, yellow-poplar, and dogwood trees. This soil is widely distributed, mainly on narrow, slightly rounded ridges and spurs. It is associated with Dickson, Bodine, Baxter, and Briensburg soils, and with other Mountview soils.

Profile description:

0 to 8 inches, pale-brown to grayish-brown, friable, mellow silt loam; 6 to 9 inches thick.

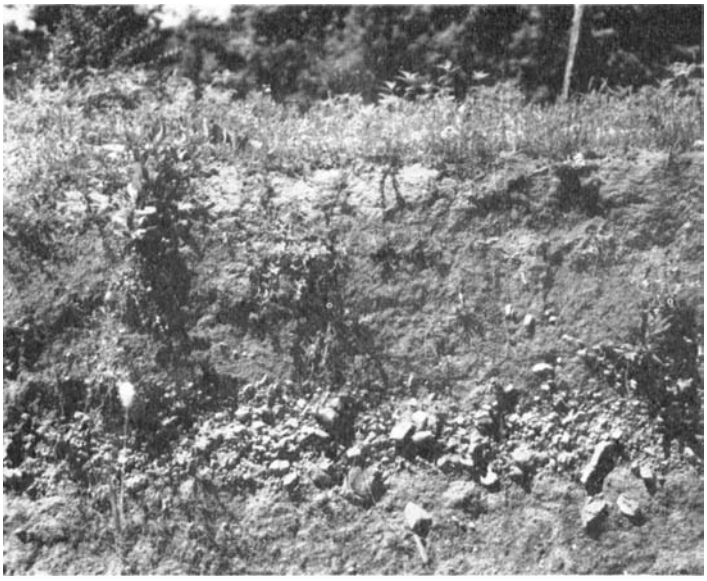

Figure 5.—Mountview silt loam formed from about 24 inches of windblown silt underlain by materials weathered from cherty limestone.

8 to 12 inches, yellowish-brown, friable, heavy silt loam; 4 to 6 inches thick.
12 to 32 inches, yellowish-brown or brownish-yellow friable silty clay loam; weak medium blocky structure; occasionally contains a few light-gray splotches in the lower part; in places 12 to 20 inches thick.
32 inches +, brownish-yellow to yellowish-red firm cherty silty clay loam, splotched and streaked with yellow, brown, and gray; 5 feet or more thick.

The soil is moderately low in organic matter and plant nutrients and medium to strongly acid. Surface runoff is slow; internal drainage moderate; and the water-supplying capacity moderately high. The soil is permeable to air, roots, and water. It is relatively free of chert to depths of 18 to 30 inches, but numerous angular chert fragments occur lower in the profile.

Some areas of soil are included that have strong-brown to yellowish-red subsoils and are more brown in the surface layer. In many places, a layer 2 to 6 inches thick, just above the underlying cherty material, is highly splotched with gray and strong brown. Other areas are included that have a weak siltpan, but it is not practical to separate them because they are small. In some places a few angular chert fragments occur on the surface and throughout the profile.

Use suitability.—Practically all of this soil is in forest; a small acreage has been cleared and used for crops and pasture.

This soil is physically well suited to various crops but is only moderately productive. Amendments are necessary for most crops and essential for alfalfa and red clover. The soil is easy to work and moderately easy to conserve. Intertilled crops can be grown in a moderately short rotation if other management practices are good.

Much of this soil occurs in long, narrow areas on ridge crests in highly dissected areas. In such positions, it is associated with steep Bodine and Baxter soils that are not well suited to crops or pasture. On most farms, these areas should be left in forest.

Mountview silt loam, eroded undulating phase (2 to 5 percent slopes) (MF).—Much of the original surface layer has been lost from this well-drained soil, although the original surface still constitutes the plow layer over much of the area. The large amount of organic matter originally in this thin surface layer has been lost through erosion or dissipated by tillage. A few small severely eroded places are conspicuous because the subsoil is exposed.

The present surface layer is a pale-brown to yellowish-brown, friable silt loam. Where the subsoil has been mixed with the topsoil, the present surface layer is more yellow and slightly heavier in texture. The subsoil is a yellowish-brown or brownish-yellow friable silty clay loam.

This soil generally occurs on somewhat broader uplands than those occupied by Mountview silt loam, undulating phase. It is associated with Dickson, Bodine, Briensburg, and Greendale soils. In some places this soil forms a complex pattern with the Dickson soils and with shallow phases of the Mountview soils. It was not practical to map these areas of intermingled soils separately, so they have been mapped as Mountview silt loam, eroded undulating phase.

Use suitability.—All of this soil was once cleared and used for crops or pasture, but about 25 percent is now idle and covered with weeds, briers, sassafras, and broomsedge.

All of the crops commonly grown can be produced on this soil. It is necessary to use amendments liberally, however, if highest yields are to be maintained. Red clover and alfalfa need special care. Row crops can be grown in a moderately short rotation if other management practices are adequate. This soil is easy to work and moderately easy to conserve.

Mountview silt loam, rolling phase (5 to 12 percent slopes) (MG).—This well-drained soil is confined largely to narrow, rounded ridgetops in highly dissected parts of the county. It occurs on narrower, more rounded ridge crests and on stronger slopes than Mountview silt loam, undulating phase. The relatively chert-free silt layer is somewhat thinner than that of the undulating phase, although the range in depth is the same for the two soils.

This soil has a pale-brown to grayish-brown, friable, mellow silt loam surface layer and a yellowish-brown or brownish-yellow friable silty clay loam subsoil. It is widely distributed and is closely associated with Dickson, Bodine, and Baxter soils. Individual areas are small in size and irregular in shape.

Use suitability.—All of this soil is under a cover of oak and hickory. Most of these woodland areas are parts of larger forests.

This soil can produce most crops commonly grown in the county. The greater part, however, is in narrow areas on highly dissected landscapes, and in association with soils not suited to crops or pasture. In such isolated places, the soil is probably best left in forest. Where the soil is cleared for crops, moderate to good yields can be obtained if crop rotations and fertilizers are used properly. The soil is easy to work, but it is moderately difficult to conserve because it is erodible.

Mountview silt loam, eroded rolling phase (5 to 12 percent slopes) (MH).—This well-drained soil is on stronger slopes than Mountview silt loam, undulating phase, and is more eroded. Much of the original surface layer—25 to 75 percent in most places—has been lost. The remnants of the original surface layer and the upper part of the subsoil have been mixed by tillage. Consequently, the present surface layer varies in color from pale brown to yellowish brown, and in texture from a friable silt loam to a heavy silt loam. The subsoil is a yellowish-brown or brownish-yellow friable silty clay loam. This soil further differs from the undulating phase in having a more shallow chert-free silt layer; and it also includes more small areas of associated Bodine, Baxter, Dickson, or shallow Mountview soils. It is widely distributed, chiefly on the long, narrow ridgetops.

Use suitability.—All of this soil was once cleared, but only about 40 percent is now cultivated or in pasture; the rest is idle.

This soil is moderately well suited to various crops, including corn, tobacco, small grains, and lespedeza. With proper fertilization, it is satisfactory for red clover and alfalfa. Although it is easy to till, it is moderately difficult to keep at a high level of productivity because it is deficient in most major plant nutrients. Its high erodibility limits the intensity to which it can be used.

Mountview silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (MO).—This soil is more eroded than Mountview silt loam, eroded rolling phase. Most of the original surface layer has been lost. The present surface layer is composed of the upper part of the subsoil. Shallow gullies are common. They can be crossed with light farm machinery but cannot be obliterated by tillage. Areas between these gullies, however, retain much of the original surface soil.

The texture of the present surface layer ranges from silt loam to silty clay loam, and its color from pale brown to yellowish brown. The subsoil is a yellowish-brown or brownish-yellow friable silty clay loam. The underlying chert layers are exposed in many places.

Use suitability.—All of this soil has been cleared and used for pasture. Most of it is now idle or in unimproved pasture.

This soil has been severely eroded and is poorly suited to crops or pasture. Its management requirements are very exacting, and its use is limited. Cultivated crops grow poorly, and yields are very low. Under high level of management, fair pastures can be established and maintained. If good pasture management is practiced for some time, fertility can be restored and eventually the soil can be used for crops.

This well-drained soil is moderately easy to work, but it is extremely erodible, and fertility is difficult to maintain.

Mountview silt loam, rolling shallow phase (5 to 12 percent slopes) (MK).—This well-drained soil occurs on slopes and ridgetops. It has developed under a cover of oak and hickory. The parent material was a 10- to 18-inch layer of windblown silt over cherty limestone material. The soil is on slightly stronger slopes and has a thinner chert-free silt layer than Mountview silt loam, undulating phase. It is intermediate between that soil and Bodine and Baxter soils in thickness of its chert-free silt layer and in many other characteristics.

This soil occurs in small areas and is closely associated with Dickson, Baxter, Bodine, and Greendale soils, and with other soils of the Mountview series.

Profile description:

0 to 6 inches, pale-brown to grayish-brown, very friable silt loam; weak medium crumb structure; 4 to 8 inches thick.
6 to 16 inches, yellowish-brown or brownish-yellow, friable, heavy silt loam or silty clay loam; weak to moderate medium blocky structure; 6 to 15 inches thick.
16 to 48 + inches, brownish-yellow to reddish-brown, friable, very cherty silty clay loam, splotched and streaked with gray and yellow.

This soil is strongly to very strongly acid, low in organic matter and plant nutrients, moderately low in water-supplying capacity, and permeable to air, roots, and water. Surface runoff is medium, and internal drainage is moderate to rapid. To depths of 10 to 18 inches the soil is relatively free of chert, but the underlying layers contain many angular chert fragments. This soil in many characteristics is transitional between the Bodine and Baxter cherty silt loams and between the Dickson and Mountview silt loams. In most places it lies geographically between these soils. As a consequence, many areas of this soil include small bodies of those soils. Other areas on the ridgetops or at the break in the slope include as much as 15 to 25 percent of cherty soils.

Use suitability.—The present cover consists mostly of small- to medium-sized oaks and hickory. Little commercial timber remains.

Although this soil is physically well suited to crops, a large part occurs on long, narrow areas isolated by steep Bodine and Baxter soils. Because the soil has low natural fertility, the yields of corn, small grains, lespedeza, and tobacco will be low unless amendments are used. The soil is easy to work but moderately difficult to conserve. It is erodible when clean cultivated. Tilled crops should be grown in moderately long rotations to maintain fertility.

Mountview silt loam, eroded rolling shallow phase (5 to 12 percent slopes) (ML).—This well-drained soil is more eroded than Mountview silt loam, rolling shallow phase; its chert-free layer is thinner; and scattered chert fragments may occur on the surface and in the plow layer in places. Part of the original surface soil has been lost—as much as 25 to 75 percent in most places. Small areas of the subsoil are exposed, and the thickness of the remaining surface layer is variable. Angular chert fragments occur in the plow layer in the more eroded areas. Organic matter, plant nutrients, and the water-supplying capacity have been reduced by tillage and erosion.

The present surface layer is a pale-brown to yellowish-brown, friable silt loam. The subsoil is a friable, heavy silt loam or silty clay loam, yellowish brown to brownish yellow in color.

This soil occurs on ridgetops or on the milder slopes. It is closely associated with Dickson, Baxter, and Bodine soils, and with other soils of the Mountview series.

Use suitability.—All of this soil was once cleared and used for crops and pasture. A large part is now idle and has grown up to weeds, broomsedge, briers, and bushes.

This soil is suitable for crops but has low natural fertility and moderately low water-holding capacity. Yields are not high, even under good management. Corn, small grains, lespedeza, and tobacco are grown. Amendments are needed to obtain good yields of red clover and alfalfa. The soil is easy to work but moderately difficult to maintain. Moderately long rotations should be used if row crops are grown. Fair to good pasture can be established and maintained if the soil is fertilized properly. Nevertheless, pasture yields will be low during the dry season.

Mountview silty clay loam, severely eroded rolling shallow phase (5 to 12 percent slopes) (MP).—Much of the original surface layer has been lost from this soil, and remnants of it are mixed with the upper part of the subsoil. The surface soil has not been removed uniformly, and in places the plow layer is entirely within the original surface layer. In color and texture the present surface layer varies widely. It ranges from pale brown to brownish yellow, and from a friable silty clay loam to a silt loam. The subsoil is a yellowish-brown or brownish-yellow friable silty clay loam. Numerous shallow gullies have cut down to the subsoil, and the underlying cherty layer is frequently exposed.

This soil occurs in small, widely distributed areas. It is closely associated with Dickson, Baxter, and Bodine soils, and with other members of the Mountview series.

Use suitability.—All areas of this soil have been cleared and used for crops or pasture, but they are now idle or in unimproved pasture.

This soil is poorly suited to crops or pasture. If good management is practiced, fair pasture can be established and maintained. If such practices are continued for some time, the fertility and physical properties of the soil can be restored to such extent that it can be used again for crops. The soil is moderately easy to work, although the gullies may prohibit the use of heavy farm machinery in places. It is difficult to maintain or increase crop yields because this soil is extremely erodible.

Mountview silt loam, hilly shallow phase (12 to 25 percent slopes) (MM).—This well-drained soil is on stronger slopes and has a thinner chert-free layer than Mountview silt loam, rolling phase. The chert-free layer, however, may have a greater range in thickness than that of the rolling phase. The surface layer is a pale-brown to grayish-brown friable silt loam, and the subsoil is a yellowish-brown or brownish-yellow, friable, heavy silt loam or silty clay loam. The lower part of the subsoil generally is quite cherty.

This extensive soil occurs in small- to medium-sized areas that are widely distributed in association with Baxter and Bodine soils, and with other Mountview soils.

Use suitability.—All of this soil is under a cover of oaks and hickory. The stands have been cut over many times, and the remaining timber is small and of poor quality. The growth of hardwood forest is slow, and the yields of marketable timber are low.

This shallow soil is poorly suited to tilled crops, mainly because of its strong slopes, low fertility, and erodibility. It is moderately easy to work, especially with light farm equipment, but it is very difficult to conserve once it is cleared and tilled. Pasture is not naturally productive, although fair yields can be obtained under good management.

Much of this soil occurs in highly dissected areas in association with steep, cherty Bodine and Baxter soils. The associated soils are not suited to crops or pasture, and in such isolated places this soil is best left in forest.

Mountview silt loam, eroded hilly shallow phase (12 to 25 percent slopes) (MN).—This well-drained soil is on stronger slopes and is more eroded than Mountview silt

loam, rolling shallow phase. Much of the original surface layer has been lost—from 25 to 75 percent in most places. The originally large amount of organic matter in the thin surface layer has been lost or dissipated by tillage. The thickness of the present surface soil is variable; and the color of this friable silt loam ranges from pale brown to yellowish brown. Small areas of exposed subsoil are common, and in the more eroded places some chert fragments occur throughout the surface layer. The subsoil is a yellowish-brown or brownish-yellow friable heavy silt loam or silty clay loam. The soil is widely distributed. It occurs in small- to medium-sized areas in association with Bodine and Baxter soils and with other Mountview soils.

Use suitability.—All of this soil has been cleared and used for crops or pasture, but a large acreage is now idle. The quality and carrying capacity of the pastures are generally low; the cover includes broomsedge, native grasses, weeds, briers, and brush. The acreage planted to field crops is small and is normally confined to selected sites.

This soil is poorly suited to crops, chiefly because of its low fertility and erodibility. It is moderately easy to work but difficult to conserve if used for intertilled crops. With adequate fertilizers, however, fair pasture can be established and maintained. Yields will not be high, even under a high level of management, because the subsoil is droughty.

Mountview silty clay loam, severely eroded hilly shallow phase (12 to 25 percent slopes) (MR).—This soil was derived from a thin layer of loess over cherty limestone material. Practically all of the original surface layer has been lost. The present surface soil consists mainly of the upper part of the subsoil, but in places it still retains much of the original surface material. Numerous gullies have penetrated the subsoil. Areas between the gullies may retain much of the original surface soil. The texture of the present surface layer ranges from silt loam to silty clay loam, and the color from pale brown to yellowish brown. The subsoil, a yellowish-brown or brownish-yellow silty clay loam, becomes very cherty below depths of 12 to 18 inches.

This well-drained, inextensive soil is widely distributed in small areas. The largest acreage is in the central and eastern parts of the county, where it is associated with Baxter and Bodine soils, and with other members of its own series.

Use suitability.—All of this soil has been cleared, but a large part is now idle land or wasteland. Broomsedge and native grasses are growing on the small area used for pasture. Erosion and continuous cropping have reduced the fertility of this soil to the place where it is no longer suitable for crops or pasture. It is very low in organic matter and plant nutrients and has a very low water-supplying capacity. This soil is best suited to trees, as it is susceptible to further erosion.

Paden silt loam, eroded undulating phase (2 to 5 percent slopes) (PA).—This moderately well drained siltpan soil lies on terraces or old colluvial lands. The alluvium consists of a mixture of materials washed from uplands underlain by many kinds of rocks, including limestone. A thin layer of windblown silt covers the alluvium. The soil formed under a hardwood forest of oak and hickory.

The soil occurs in small areas in most of the creek valleys and is closely associated with Pickwick soils and other Paden soils. Humphreys, Taft, and Robertsville soils lie on the adjacent low terraces, and Ennis, Lobelville, and Melvin soils on the nearby first bottoms. Bodine, Baxter, and Mountview soils are on the adjacent upland slopes, and in most places the cherty material underlying the silt layer has washed or rolled from these soils.

Profile description:

0 to 6 inches, pale-brown to grayish-brown or brown, mellow, friable silt loam; weak medium crumb structure; 0 to 8 inches thick.
6 to 20 inches, yellowish-brown, friable, heavy silt loam or silty clay loam; weakly to moderately defined medium blocky structure; 12 to 18 inches thick.
20 to 26 inches, yellowish-brown to brownish-yellow, friable, heavy silt loam or silty clay loam, splotched with gray, yellow, and brown; 4 to 8 inches thick.
26 to 36 inches, siltpan of brownish-yellow, compact or moderately compact silty clay loam, prominently mottled with light gray and strong brown; moderate coarse blocky structure; 8 to 12 inches thick.
36 inches +, yellowish-brown to reddish-brown friable silt loam or gravelly silt loam, splotched and streaked with gray and strong brown; 3 to 5 feet or more thick.

Most of this soil has been moderately eroded. It has lost a part of its thin surface layer, which was high in organic matter. Mixing of the surface layer with the subsoil during tillage has produced a plow layer more variable than the original surface layer in thickness, color, and texture.

The soil is medium to strongly acid, low in organic matter and plant nutrients, and moderately low in water-supplying capacity. The surface soil and subsoil are permeable to air, roots, and water; but the siltpan is only slightly permeable. The upper soil layers are free of gravel or chert, but below the siltpan, gravel and chert occur in most places. A small acreage is mapped with this soil that has a less distinct siltpan and a strong-brown subsoil.

Use suitability.—Practically all of this soil has been cleared and is used for crops. A small part is idle or in pasture.

Although this soil is physically suited to most crops commonly grown in the county, its productivity is limited by slow internal drainage and low fertility. Corn, small grains, lespedeza, and sericea lespedeza can be grown successfully, but yields are low unless fertilizers are used. Red clover can be grown with fair success under proper fertilization. Continuous crops of alfalfa do not give high yields, even under good management.

This soil is easy to work and moderately easy to conserve. Tilled crops can be grown in a moderately short rotation. The soil is fairly well suited to pasture, but fertilizers are needed for satisfactory yields.

Paden silt loam, eroded rolling phase (5 to 12 percent slopes) (PB).—This moderately well drained siltpan soil occurs on high terraces or old colluvial lands. It has developed from a layer of loess, 24 to 42 inches thick, that lies over alluvium derived mainly from limestone. This soil has stronger slopes, is more eroded, and has surface layer more variable in thickness, color, and texture than that of Paden silt loam, eroded undulating phase. The present surface layer consists of a grayish-brown to yellowish-brown friable silt loam or heavy silt loam. The

subsoil is a yellowish-brown, friable, heavy silt loam or silty clay loam.

A few small areas included in this mapping unit are cherty throughout their profile. A small uneroded acreage is also mapped with this soil.

This soil is widely distributed, but the largest areas occur along Whiteoak and Cane Creeks. It is closely associated with Pickwick, Humphreys, Taft, and Robertsville soils of the terraces, with Bodine and Baxter soils of the uplands, and with Ennis and Lobelville soils of the bottom lands.

Use suitability.—All of this soil has been cleared. About 60 percent is in crops, and 30 percent in hay and pasture. The rest is idle.

Although this soil is physically suited to many of the crops grown, it is naturally low in productivity. Continuous cropping and erosion have further depleted the soil and reduced yields. This soil is easy to till, and most types of farm machinery can be used on it. Because it is susceptible to erosion, it is moderately difficult to conserve. Row crops that require tillage should be grown in a moderately long rotation with close-growing or sod-forming crops.

Corn, small grains, lespedeza, red clover, tobacco, and various pasture plants can be grown successfully. Fertilizers are generally required for satisfactory yields and are essential for the establishment of red clover.

Paden silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Pc).—Much, or all, of the surface layer and some subsoil material have been lost from this soil through erosion. The present surface layer consists chiefly of the upper part of the subsoil mixed with various amounts of the original surface layer.

The soil is moderately well drained but variable in thickness, color, and texture. Numerous shallow gullies have penetrated the subsoil, and a few are so deep they cannot be crossed with ordinary farm machinery. All of the thin, chert-free silt layer has been removed in places, and chert fragments are scattered over the surface and throughout the profile. The present surface layer ranges from grayish brown to yellowish brown, and from a friable silt loam to a silty clay loam. The subsoil is yellowish-brown, friable silty clay loam.

This soil occurs in small individual areas widely distributed along the major streams. It is closely associated with Pickwick, Bodine, Baxter, Ennis, and Lobelville soils.

Use suitability.—Most of this soil is idle or in unimproved pasture. The acreage in cultivated crops is small and is confined to small areas.

This severely eroded soil is unsuited to crops and very poorly suited to pasture. It is difficult to reforest, because the trees grow slowly. Under present conditions, this soil is best used for pasture. Pastures of fair quality will require the liberal use of amendments and other good management practices. After several years in well-managed pasture, this soil can be used at intervals for tilled crops.

The soil is moderately easy to work, although gullies interfere with the use of heavy farm machinery in many places. It is very susceptible to further erosion and is difficult to conserve.

Pickwick silt loam, undulating phase (2 to 5 percent slopes) (Pd).—This brown, well-drained soil of the high terraces was derived from loess or loesslike silt underlain by mixed alluvium or by various mixtures of silt and alluvium (fig. 6). The alluvium consists mainly of limestone materials. The soil developed under a forest of oak and hickory interspersed with tulip-poplar, maple, beech, sweetgum, and walnut. It is closely associated with Paden, Taft, and Robertsville soils of the bottom lands, and with the Baxter, Bodine, and Mountview soils of the uplands. It occurs in small individual areas along Guices and Yellow Creeks and other major creeks in the county.

Figure 6.—**Pickwick silt loam in the foreground and Mountview soils in the background. Pickwick soils are among the best in the county.**

Profile description:

0 to 8 inches, brown to dark-brown, mellow, very friable silt loam; weak medium crumb structure; 6 to 10 inches thick.
8 to 12 inches, brown to yellowish-brown, friable, heavy silt loam; 3 to 5 inches thick.
12 to 20 inches, brown, reddish-brown, or yellowish-red, friable silty clay loam; weakly to moderately defined medium blocky structure; 6 to 10 inches thick.
20 to 42 inches, reddish-brown or yellowish-red, friable or moderately friable silty clay loam; moderately defined, medium blocky structure; 12 to 30 inches thick.
42 inches +, reddish-brown, moderately firm, gritty silty clay loam; contains variable amount of waterworn chert fragments; 5 feet or more thick.

This soil is moderately high in organic matter, plant nutrients, and water-supplying capacity. It is medium to strongly acid and readily permeable to air, roots, and water. Surface runoff is slow, and internal drainage is moderate. The upper layers are free of gravel, but the lower layers may contain substantial amounts.

A small acreage included with this soil is intermediate in age and has many profile characteristics common to Pickwick and Tigrett soils. The horizons in such areas are somewhat less distinct than is normal for a Pickwick soil.

Use suitability.—About half of Pickwick silt loam, undulating phase, is in forest. Under a high level of management, the cleared areas can be used fairly intensively for many kinds of crops. Amendments, however, are needed for the successful growth of red clover, alfalfa, or similar legumes, and they probably will be necessary for continued high yields of all crops. The soil is very easy to work and easy to conserve. The size and shape of fields and the slopes are favorable for use of most farm

implements. Pasture of high carrying capacity is fairly easy to establish and to maintain.

Pickwick silt loam, eroded undulating phase (2 to 5 percent slopes) (PE).—Much of the original surface layer has been lost from this soil, and in small severely eroded areas the subsoil is exposed. Plowing has mixed subsoil with the surface layer but has significantly changed the texture only in the more severely eroded places. The present surface layer is a brown to yellowish-brown friable silt loam. The subsoil is a brown to yellowish-red friable silty clay loam.

Some areas too small to be mapped separately are included with this soil. They have less distinct horizons and some have gravel throughout the profile. They were derived almost entirely from windblown silt mixed with alluvium or colluvium.

Nearly all of this well-drained soil is on the high terraces in the eastern part of the county along Yellow, Guices, and Wells Creeks. It is closely associated with Paden, Tigrett, Baxter, and Mountview soils.

Use suitability.—This soil has been cleared. It is now used mainly for crops, although some areas are in pasture.

The soil is desirable for crops because it has favorable slopes, natural fertility, and adequate water-supplying capacity. Good crop yields are obtained without supplements, but amendments are necessary before red clover and alfalfa can be grown satisfactorily, and they are needed for high yields of all crops. This soil responds well to good farming practices, and under a high level of management can be used intensively for crops. It is easy to work and moderately easy to conserve. Pastures are easy to establish and maintain.

Pickwick silt loam, eroded rolling phase (5 to 12 percent slopes) (PF).—In most places, 25 to 75 percent of the original surface layer has been lost from this well-drained soil of the high terraces. The present surface layer consists of a brown to yellowish-brown, friable silt loam or silty clay loam. It is highly variable in color and texture where the remnants of the old surface layer have been mixed with the subsoil. Numerous, small, severely eroded areas are conspicuous because the subsoil has been exposed. The subsoil is a brown to yellowish-red friable silty clay loam.

Included in this mapping unit are many small areas that differ in age, distinctness of the horizons, nature of the parent material, and presence of gravel or chert. Some of these areas are intermediate between Pickwick and Tigrett soils in distinctness of their horizons. Waterworn chert or gravel may be on the surface and scattered throughout the profile. A very small acreage is also included that occupies slopes as strong as 12 to 25 percent.

This is the most extensive of the Pickwick soils and occurs in small- to medium-sized areas chiefly in the eastern part of the county in Yellow, Guices, and Wells Creek valleys. It is associated with Paden, Tigrett, Greendale, Bodine, Baxter, and Mountview soils.

Use suitability.—All of this soil has been cleared and is now used for crops or pasture. Although it is physically suited to field crops, it is not so desirable for tilled crops as Pickwick silt loam, undulating phase, because its tilth properties have been impaired, its fertility lowered, and its ability to supply moisture decreased. It is also more susceptible to erosion than the undulating phase and can be used less intensively for intertilled crops. It is easy to work and moderately easy to conserve. It is very responsive to treatments, and high crop yields can be maintained if crop rotations and amendments are properly used. Good pastures are easy to establish and maintain.

Robertsville silt loam (0 to 3 percent slopes) (RA).—This gray, poorly drained soil lies on nearly level stream terraces. It has formed from mixed alluvium that washed from uplands and is underlain by many kinds of rocks, dominantly limestone. The soil along the creeks differs from that on the terraces in having formed largely from limestone alluvium mixed with silty windblown material. The original forest cover was water oak, willow oak, sweetgum, hickory, ash, sycamore, and other hardwoods. Most of the acreage lies on the low terraces of the Tennessee River in association with Taft and Melvin soils. The individual areas are generally small and irregular in shape.

Profile description:

0 to 7 inches, gray or brownish-gray friable silt loam with few strong-brown mottlings; 6 to 8 inches thick.
7 to 20 inches, light-gray friable silt loam or silty clay loam with some strong-brown or light-yellow mottlings; 10 to 20 inches thick.
20 to 32 inches, light-gray compact or very compact silty clay loam or silty clay, splotched with yellow and strong brown; 8 to 14 inches thick.
32 inches +, stratified alluvium, predominantly light-gray silt loam or silty clay loam; extremely variable in content of chert or gravel; 6 feet or more thick.

Robertsville silt loam is strongly to very strongly acid. It has low supplies of organic matter and plant nutrients. The highly mottled gray color indicates that the water table is high most of the time. The relatively impermeable, compact layer retards or almost prohibits drainage. The surface layer and upper subsoil, however, are permeable to air, roots, and water. Although free of gravel in most places, the areas in the creek valleys contain some waterworn chert. Small, dark-colored concretions occur on the surface and throughout the profile in most places. They may be abundant and conspicuous in the pan layer.

Surface runoff and internal drainage are very slow. Although saturated with water much of the time, the water-holding capacity of the soil is fairly low, and crops are injured by drought during extended dry periods.

Use suitability.—The greater part of Robertsville silt loam has been flooded by Kentucky Reservoir. The areas not flooded have been cleared and are used for crops or pasture with the associated Taft and Humphreys soils. The pastures are of poor quality, however, and crop failures are common.

Robertsville silt loam is too poorly drained to produce most crops commonly grown in the county, but it is fairly well suited to sorghum or other crops that may be planted late in spring. Lespedeza does fairly well on areas where surface drainage is fair.

This soil is fair for pasture, but in most areas now used for pasture the forage is of poor quality. Because it occurs in small, irregularly shaped areas in association with soils that are adapted to crops, use of this soil for pasture is not feasible in many places. Surface drainage by open ditches or bedding would increase the usefulness of the soil and its yield of forage. Tile drains would probably not be effective, because the impermeable, compact layer in the soil retards drainage. The soil is moderately easy to work if not too wet, but is dry enough to be worked

only a short time each year. The soil is easily protected from erosion, but it is hard to maintain a satisfactory drainage system.

Stony steep land, Baxter soil material (25 to 60+ percent slopes) (Sa).—This miscellaneous land type is characterized by numerous limestone outcrops. Bedrock outcrop covers most of the area, but the soil material between the outcrops may be 15 to 20 inches thick, and it probably averages about 10 inches. This material is similar to that from which the Baxter soils were derived. It consists of a dark-brown or grayish-brown, gritty, friable silt loam, 2 to 3 inches thick, that overlies a light-brown, reddish-brown, or yellowish-brown silty clay loam or silty clay. In some places the soil material is similar to that of the Bodine soils.

A few small areas with 5 to 25 percent slopes are included. The cover consists of scrubby trees, an undergrowth of brush, and various grasses and weeds. The trees are mainly oaks and hickory with some cedar.

Individual areas of this land type are small and widely distributed in association with Baxter, Bodine, and Mountview soils.

Use suitability.—Most of this stony land type is wooded. About 5 percent is used for pasture. The land is not suited to crops and is very poor for pasture. It is probably best used for trees, but some of the less stony areas may be used advantageously for permanent pasture. Pasture and forest yields can be expected to be very low, mainly because of the very low water-supplying capacity of this land.

Taft silt loam (0 to 3 percent slopes) (Ta).—This imperfectly drained soil on stream terraces was derived from mixed alluvium washed from uplands underlain by various rocks, dominantly limestone. The soil is intermediate between the better drained Humphreys and Wolftever soils and the poorly drained Robertsville soil in degree of drainage, color, and development of the pan layer. It is closely associated with those soils. The largest acreage is on terraces along the Tennessee River in association with the Robertsville soil; a smaller acreage is on the terraces of the major creeks in association with Humphreys, Ennis, and Robertsville soils. The individual areas are small and irregularly shaped.

Profile description:

0 to 6 inches, brownish-gray to light-brown friable silt loam; 5 to 8 inches thick.
6 to 22 inches, brownish-yellow to pale-yellow, friable, heavy silt loam or silty clay loam, faintly splotched with light gray and strong brown in the upper part; these splotches become very numerous and prominent in the lower part; 12 to 20 inches thick.
22 to 42 inches, mottled gray, yellow, and brown compact silty clay loam; contains numerous small dark concretions; 15 to 25 inches thick.
42 inches +, mottled gray, yellow, and brown moderately friable silty clay loam; contains considerable chert gravel in places.

Taft silt loam is strongly to very strongly acid and low in organic matter and plant nutrients. Surface runoff is very slow, and internal drainage is slow. The surface soil and subsoil are permeable, although the pan layer is almost impermeable. The water table is at or near the surface in rainy seasons, especially during winter and early in spring. For this reason, the soil is very poorly aerated at times, and root development is restricted. The water-supplying capacity is moderately low. The soil is free of stones or gravel in most places, but waterworn chert occurs on the low terraces along the creeks. Numerous concretions are scattered throughout the subsoil and pan layer in most places.

Use suitability.—All of this soil along the Tennessee River is now flooded by Kentucky Reservoir. The small acreage along the creeks was once cleared, but most of it is now idle. That part farmed with the associated Humphreys soils gives low crop yields, and occasionally crops fail.

The use suitability of this soil is limited by imperfect drainage. Open ditches, bedding, and row direction would improve surface drainage and increase crop yields as well as extend the usefulness of the soil. Ordinarily, tile drainage is impractical. The soil is easy to work when it is sufficiently dry, but the proper moisture content is maintained only for short periods. It is easy to conserve, but adequate drainage is difficult to maintain. With proper fertilization, the soil is suited to short rotations, although long rotations are more feasible because of the limited kinds of crops that can be grown. Corn, soybeans, lespedeza, white clover, alsike clover, and redtop can be grown successsfully.

Talbott-Pickwick silt loams, eroded rolling phases (5 to 12 percent slopes) (Tb).—This well-drained complex consists of areas of two kinds of soil so intricately associated that it is impractical to separate them on the map. The Talbott soil was derived from materials weathered from the underlying clayey limestone, whereas the Pickwick soil was from a thin silt mantle underlain by colluvial materials washed over the Talbott soil.

These soils, which formed under a cover of oaks and hickory, are associated with Maury, Mercer, Ennis, Robertsville, Mountview, Baxter, and Bodine soils. Practically all of this separation is in the basin of Wells Creek and is too small in extent to be important agriculturally.

Profile descriptions:

Talbott silt loam, eroded rolling phase—
0 to 6 inches, grayish-brown to brown, friable silt loam or silty clay loam; 4 to 8 inches thick.
6 to 24 inches, reddish-brown or yellowish-red very firm silty clay; moderately to strongly defined medium blocky structure; some concretions and yellowish splotches in the lower part; 14 to 20 inches thick.
24 inches +, reddish-brown, yellowish-red, or reddish-yellow very firm clay or silty clay, streaked with yellow and gray; very plastic when wet; clayey limestone bedrock at 2 to 5 feet.

Pickwick silt loam, eroded rolling phase—
0 to 6 inches, grayish-brown to yellowish-brown friable silt loam or heavy silt loam; 4 to 10 inches thick.
6 to 12 inches, brown or yellowish-brown friable silt loam or heavy silt loam; 3 to 5 inches thick.
12 to 20 inches, brown or reddish-brown friable silty clay loam; 6 to 10 inches thick.
20 to 32 inches, reddish-brown or yellowish-red friable or moderately friable silty clay loam; 6 to 20 inches thick; in most places grades rapidly into underlying Talbott soil materials.

Much of the surface soil of this complex has been lost through erosion. A few included areas are severely eroded and have lost most of their surface soil and part of the subsoil. Shallow gullies are common. As a result of erosion and consequent mixing with the subsoil, the present surface soil varies greatly in thickness, color, and texture.

The soils of this separation are medium to slightly acid and moderately well supplied with plant nutrients. Permeability of the Talbott soil is restricted by its heavy-textured, dense subsoil. Surface runoff is medium to rapid, and internal drainage is slow to moderate. An occasional bedrock outcrop or limestone fragments occur on the surface of and throughout the Talbott soil. Both the Talbott and Pickwick soils of this complex vary greatly in thickness. A very small included acreage differs from the separation described in having stronger slopes of 12 to 25 percent.

Use suitability.—Nearly all of this separation has been cleared and is now used for crops or pasture; the rest is idle. The individual soils of this complex differ in their suitability for crops and pasture. The Pickwick soil has much better tilth, is more permeable, and is easier to work and conserve than the associated Talbott soil. The Talbott soil is moderately fertile.

The areas of this mapping unit, as a whole, are moderately easy to work but moderately difficult to conserve if used for intertilled crops. The soils are suited to corn, lespedeza, and many hay and pasture crops. The Talbott soil is very well suited to deep-rooted legumes, such as alfalfa and red clover, but fertilizer and lime are necessary to establish and maintain these crops. These soils are well suited to permanent pasture, which is easily established and maintained.

Tigrett silt loam (2 to 8 percent slopes) (Tc).—This well-drained brown soil of the colluvial lands consists of materials recently washed from Mountview, Pickwick, Dickson, Paden, and similar silty soils. The parent material has been mixed with cherty limestone materials in places. The soil occurs in small, widely scattered individual areas in association with Mountview, Dickson, Baxter, Paden, and Pickwick soils.

Profile description:

0 to 8 inches, dark-brown to dark grayish-brown, mellow, very friable silt loam; 6 to 12 inches thick.
8 to 30 inches, brown to yellowish-brown friable silt loam or heavy silt loam; 18 to 30 inches thick.
30 inches +, yellowish-brown, light yellowish-brown, or reddish-brown friable silt loam to moderately friable cherty silty clay loam; 2 to 6 feet thick.

The soil is medium to strongly acid and moderately high in organic matter and plant nutrients. It is very permeable to air, roots, and moisture and has a very high water-supplying capacity. Surface runoff is slow to medium, and internal drainage is moderate. The soil is relatively free of chert in the upper layers but may be very cherty in the lower part. The depth of the colluvial deposit may vary from 2 to 6 feet. A few small included areas were derived mainly from cherty limestone colluvium. These areas are somewhat redder and heavier textured than Tigrett silt loam.

Use suitability.—Nearly all of this soil has been cleared and is now used intensively for crops (fig. 7). Home gardens are grown on a small area, and a very small acreage is in pasture or is idle.

This highly productive soil is easy to work and conserve. It is well suited to intensive cropping, and many kinds of crops are successfully grown. Moderate to high yields are obtained without amendments, but higher yields can be maintained if amendments are used on this responsive soil.

Figure 7.—**Tigrett silt loam can be used intensively for corn and other crops. Pasture in background is on Mountview silt loam, eroded hilly shallow phase.**

Row crops can be grown year after year without injury to the soil.

Wolftever silt loam (2 to 7 percent slopes) (Wa).—This soil is now covered by Kentucky Reservoir. Prior to flooding it was used mainly for crops, although a large area was subject to overflow and was idle each year.

At the time of the survey this yellowish-brown soil was moderately well drained and occurred on low stream terraces along the Tennessee River. It was formed from mixed alluvium washed from upland soils that weathered from many kinds of rocks, among which limestone material predominated. Wolftever silt loam developed under hardwood forest and was associated with the Taft, Robertsville, Huntington, Lindside, and Melvin soils.

Profile description:

0 to 8 inches, brown or grayish-brown friable silt loam; 6 to 10 inches thick.
8 to 28 inches, yellowish-brown to brownish-yellow, firm, moderately compact, heavy silty clay loam; 15 to 25 inches thick.
28 inches +, brownish-yellow or yellowish-brown moderately compact to moderately friable silty clay loam, streaked and splotched with gray, yellow, and brown; 2 to 10 feet thick.

This soil was medium to strongly acid and moderately well supplied with organic matter and plant nutrients. Surface runoff was slow to medium, internal drainage was slow to moderate, and the water-supplying capacity was moderately low. Root penetration was restricted by the compact subsoil.

This soil varied considerably in age and compaction of the subsoil. On the broader, more nearly level areas the subsoil was very compact, whereas on the higher terraces the subsoil layers were more friable and the surface layers were lighter in color. Included with this soil was an acreage too small to be mapped separately that had been slightly to moderately eroded.

Use and Management of Soils

Many farmers of Houston County are now practicing good soil management, and their yields are higher than the average for the county. These farmers are generally meeting the management requirements basic to good farming (*10*). They are rotating their crops; applying lime, commercial fertilizer, manure, crop residues, or other amendments; using desirable tillage methods; and, where needed, using engineering practices to control water on the land. These basic practices apply to all tillable soils of the county. They cannot be considered a plan of management for any particular farm. To plan the management of his farm, the operator needs to consider the strong points and deficiencies of his soils, prices for farm products, transportation, need for cash income, labor supply, and many other factors. Working out a plan for management for a given farm is somewhat simplified if the farmer knows which soils need about the same kind of management and have about the same suitability for tilled crops, permanent pasture, and forest. This information is supplied in the subsection, Management Groups.

Management Groups

The soils of this county have been placed in 12 management groups. All the soils in one group need about the same kind of management. Table 6 gives suitable crops, desirable rotations or uses, and suggested supplementary water-control practices for the 12 management groups. Following the table are discussions of each of the 12 groups. The need for lime, fertilizer, or other amendments is mentioned for the various management groups, but specific amounts and kinds are not suggested. For assistance in testing your soils and determining the amounts of amendments to apply, consult your county agricultural agent or a local representative of the Soil Conservation Service.

Group 1

In management group 1 are nearly level, noncherty, silty, well-drained soils of the flood plains and stream bottoms that were chiefly derived from materials of limestone origin. At the time of the survey Huntington silt loam and Egam silty clay loam were included in this group, but all of the Huntington soil and a large part of the Egam soil have been flooded by Kentucky Reservoir. The single soil remaining is Ennis silt loam.

Ennis silt loam is one of the most fertile and productive soils in the county. A small part has been flooded by Kentucky Reservoir, but the rest has been cleared and is used intensively for crops and pasture. It is well supplied with lime, organic matter, and plant nutrients, and its fertility is replenished by sediments deposited periodically by floods. High yields are often obtained without applying fertilizer or other amendments. The supply of moisture is favorable for normal plant growth.

Ennis silt loam is deep, friable, and readily permeable to roots, air, and moisture. It is reasonably free of stone and gravel and is easy to work and till. Because it is nearly level, erosion is not serious, although some scouring is caused by overflow. The soil has good natural drainage in spite of occasional flooding in spring and winter.

This soil can be tilled throughout a wide range of moisture content. Heavy power equipment can be used efficiently because the soil is friable and nearly level. Although this soil is fertile and well suited physically to pasture, it is generally used for other crops. Occasional floods deposit fine sediments on the vegetation.

Narrow bands of trees occur on the first bottoms adjacent to stream channels, but less than 5 percent of the soil is wooded. The cleared areas are used intensively for crops, mainly corn and lespedeza. Corn is grown almost continuously on many fields. Lespedeza is generally grown for hay, though it may be pastured before being plowed under.

The small acreage in pasture receives no special treatment. Various grass-and-legume mixtures are grown, and interspersed with these are the native weeds, vines, and vegetation common to the bottom lands. Permanent pasture is often established on adjoining poorly drained soils of the bottoms and terraces or on adjacent slopes. Those areas of Ennis silt loam included with Humphreys, Greendale, and the cherty Ennis soil are planted to the same crops as those surrounding soils.

Management requirements.—This soil is well suited to intensive use for tilled crops, although its use is somewhat limited by floods. It is very well suited to corn and to summer hay crops but poorly suited to alfalfa. Though alfalfa is grown successfully in places, red clover is a better crop. Small grains are subject to lodging and disease and mature later than if grown on upland soils. Tobacco can be grown, but it is usually planted on higher land.

Because tilled crops are grown almost continuously, a short rotation that includes a legume or a legume-grass mixture is desirable. Corn should be rotated with legumes that are to be cut for hay or pastured and then turned under. Some areas can be managed with associated soils of the terraces in a rotation that consists of a row crop followed by a small grain, and then by a legume hay crop sown with the grain crop. Corn yields can be increased by alternating corn and lespedeza and by applying a phosphatic fertilizer.

The practice of growing soybeans in the row with corn has proved successful elsewhere and may be desirable in Houston County. This practice is particularly good if the crop is to be hogged off. Moderate applications of a complete fertilizer are advantageous in a rotation that includes corn and small grains. No fertilizer is required for hay or cover crops if adequate amounts are applied to other crops grown in the rotation. Lime should be applied at regular intervals to legumes. All crops respond to barnyard manure and plant residues. Tobacco or other cash crops benefit from heavy applications of a complete fertilizer.

The level surface of this soil facilitates mowing, and pastures should be clipped periodically to eradicate weeds and encourage legumes. If the soil is properly fertilized and grazing is controlled, weeds are not a problem.

TABLE 6.—*Suitable uses and management practices for the soils of Houston County, Tenn.*

Management group and soil	Suitable crops	Desirable rotations or uses	Supplementary practices for water control	Remarks
Group 1 Ennis silt loam.	Corn, soybeans, and lespedeza; fairly well suited to red clover.	Corn, lespedeza. Corn, crimson clover. Corn, soybeans, red clover. Corn, truck crop, red clover.	Not needed.	Subject to periodic flooding.
Group 2 Briensburg silt loam. Lobelville silt loam.	Corn, soybeans, sorghum, lespedeza.	Corn, lespedeza. Corn, pasture 2 or more years. Pasture (Ladino clover and fescue).	Open ditches, bedding, row direction, or diversion ditches.	Same.
Group 3 Bruno loamy fine sand. Ennis cherty silt loam. Greendale cherty silt loam, undulating phase. Humphreys cherty silt loam. Lobelville cherty silt loam.	Corn, tobacco, lespedeza, red clover, alfalfa, small grains, and vegetable crops.	Corn, wheat, red clover. Tobacco, crimson clover. Tobacco, wheat or oats, red clover. Corn, alfalfa 3 years.	Diversion ditches, contour tillage.	Chert, interferes with tillage and lowers water-holding capacity.
Group 4 Humphreys silt loam. Mountview silt loam, undulating phase. Mountview silt loam, eroded undulating phase. Pickwick silt loam, undulating phase. Pickwick silt loam, eroded undulating phase. Tigrett silt loam.	Same	Corn, wheat, red clover. Corn, wheat, alfalfa 3 or 4 years. Corn, wheat, red clover, tobacco, crimson clover. Corn, crimson clover, truck crop, red clover. Permanent pasture.	Contour tillage, terraces on some of the longer slopes.	Good tilth is easily maintained; erosion not serious.
Group 5 Dickson silt loam, undulating phase. Dickson silt loam, eroded undulating phase. Paden silt loam, eroded undulating phase. Taft silt loam.	Corn, tobacco, small grains, lespedeza, and sericea lespedeza. Red clover, soybeans, and vegetable crops moderately well suited.	Corn, wheat, sericea lespedeza. Corn, lespedeza 2 years. Corn, wheat, red clover, tobacco, crimson clover.	Contour tillage, terraces on some fields.	High fertility levels difficult to maintain; erosion not serious.
Group 6 Maury silt loam, eroded rolling shallow phase. Minvale cherty silt loam, eroded rolling phase. Mountview silt loam, rolling phase. Mountview silt loam, eroded rolling phase. Mountview silt loam, rolling shallow phase. Mountview silt loam, eroded rolling shallow phase. Pickwick silt loam, eroded rolling phase. Talbott-Pickwick silt loams, eroded rolling phases.	Corn, tobacco, lespedeza, red clover, alfalfa, small grains, and vegetable crops.	Corn, wheat, red clover and orchardgrass 3 or 4 years. Corn, wheat, alfalfa 4 or 5 years. Tobacco, red clover and grass 3 or 4 years. Corn, rotation pasture 3 to 5 years. Permanent pasture.	Contour tillage, stripcropping, terraces.	Seedbed preparation should be kept at a minimum.
Group 7 Dickson silt loam, rolling phase. Dickson silt loam, eroded rolling phase. Mercer silt loam, eroded rolling phase. Paden silt loam, eroded rolling phase.	Small grains, corn, lespedeza, and sericea lespedeza. Red clover, tobacco, and vegetable crops only moderately well suited.	Corn, wheat, sericea lespedeza 4 or 5 years. Corn, wheat, red clover and grass 3 or 4 years. Small grain, red clover. Tobacco, red clover and grass 3 or 4 years.	Contour tillage, stripcropping, terraces.	Same.
Group 8 Melvin silt loam. Robertsville silt loam.	Pasture (white clover, fescue), redtop, sorghum, soybeans.	Permanent pasture (white clover and fescue). Sorghum, soybeans, lespedeza 2 years. With adequate drainage, corn, pasture 2 or more years, or corn, lespedeza 2 years.	Open ditches, bedding, diversion ditches, and tiling.	Subject to flooding or ponding.

TABLE 6.—*Suitable uses and management practices for the soils of Houston County, Tenn.*—Continued

Management group and soil	Suitable crops	Desirable rotations or uses	Supplementary practices for water control	Remarks
Group 9 Baxter cherty silt loam, rolling phase. Baxter cherty silt loam, eroded rolling phase. Bodine cherty silt loam, rolling phase. Bodine cherty silt loam, eroded rolling phase.	Corn, tobacco, soybeans, small grains, lespedeza, sericea lespedeza. Red clover moderately well suited.	Corn, small grain, lespedeza 2 years. Tobacco, crimson clover. Corn, small grain, sericea lespedeza 3 years. Corn, small grain, red clover.	Contour tillage, terraces.	Location of many areas prevents use for crops or pastures. Chert interferes with tillage.
Group 10 Mountview silty clay loam, severely eroded rolling phase. Mountview silty clay loam, severely eroded rolling shallow phase. Paden silty clay loam, severely eroded rolling phase.	Permanent pasture such as lespedeza, bermudagrass, fescue, sericea lespedeza.	Permanent pasture.	Diversion ditches, terraces, check dams in gullies.	After a few years in well-managed pasture, soils probably will be suited to crops. Management would be similar to group 7.
Group 11 Baxter cherty silt loam, hilly phase. Baxter cherty silt loam, eroded hilly phase. Bodine cherty silt loam, hilly phase. Bodine cherty silt loam, eroded hilly phase. Mountview silt loam, hilly shallow phase. Mountview silt loam, eroded hilly shallow phase.	Forest or permanent pasture of plants such as lespedeza, fescue, orchardgrass, white clover, redtop.[1]	Permanent pasture, corn or tobacco at 7- to 10-year intervals.		
Group 12 Baxter cherty silty clay loam, severely eroded hilly phase. Baxter cherty silt loam, steep phase. Baxter cherty silt loam, eroded steep phase. Bodine cherty silt loam, steep phase. Bodine cherty silt loam, eroded steep phase. Mountview silty clay loam, severely eroded hilly shallow phase. Stony steep land, Baxter soil material.	Forest	Forest	Permanent forest cover.	Reforestation advisable on farms now idle.

[1] If tilled crops must be grown, suitable crops would be corn, tobacco, soybeans, small grains, lespedeza, sericea lespedeza, and red clover. A suggested rotation would be corn, and a small grain followed by sericea lespedeza for 3 years or more; or tobacco, and red clover followed by orchardgrass for 3 years. The soils should be tilled on the contour and stripcropped. Fertility should be kept at a moderately high level to encourage growth on the strips planted to sod crops.

Group 2

Management group 2 consists of the imperfectly drained, nearly level to undulating, noncherty soils derived chiefly from materials of limestone origin. At the time of the survey three soils were included in this group, but all of the Lindside silt loam and part of the Lobelville silt loam have been inundated by Kentucky Reservoir. The two soils in management group 2 are:

Briensburg silt loam. Lobelville silt loam.

The soils of management group 2 are fair to good for crops and good to excellent for pasture (fig. 8). They are moderately easy to work and easy to conserve but are imperfectly drained and susceptible to flooding. Although they occur in small bodies, they are important because of their productiveness. Their water-supplying capacity is high to very high, and moisture relations are favorable except during wet periods. Circulation of air and moisture through the upper profile is adequate, but the lower part is waterlogged most of the time. The upper layers are medium to strongly acid, and the lower layers are strongly acid. Numerous chert fragments occur on the surface and throughout the profile, but they do not interfere with tillage.

Figure 8.—**Lobelville and Melvin soils, if properly managed, are excellent for pasture. Bodine soils are on the steep upland slopes.**

About 95 percent of the acreage in this group has been cleared and is now used mainly for crops or pasture. Corn and lespedeza are the chief crops, although some sorghum is grown on Briensburg silt loam.

Management requirements.—Both of these fertile soils are limited by imperfect drainage, and the Lobelville soil is subject to flooding. Under good management corn, tobacco, lespedeza, soybeans, sorghum, grasses, and alsike and red clovers or other legumes will produce good yields. Alfalfa and fruit trees are not well suited. Small grains are subject to lodging and winterkilling.

These soils can be used intensively for crops, but yields would be increased by including a legume in a short rotation and applying fertilizers. A rotation that would successfully maintain yields would consist of a legume, followed by grass, and then by corn. Another desirable rotation would be a small grain, a legume, corn, and soybeans. A long rotation would be 2 to 4 years of a legume-grass mixture and 1 or 2 years of a cultivated crop. Lespedeza, alsike and red clovers, orchardgrass, redtop, white clover, and meadow fescue are desirable for hay or pasture.

If the soils are farmed with associated soils, the management requirements may vary according to the needs of the adjoining areas. In the rolling uplands where Briensburg silt loam is included in the soil pattern with Dickson and Mountview soils, it is feasible to grow the same crops on all soils. The Briensburg can be used more intensively, however, where it occurs in areas extensive enough to be managed alone.

Fair to moderate crop yields are produced without fertilization, but commercial fertilizers and lime are necessary to maintain high yields. A rotation consisting of a row crop, a small grain, and then clover and grass should have moderately heavy applications of a complete fertilizer. All crops usually need phosphorus. Legumes require lime, phosphorus, and potassium. Nitrogen requirements can be met by including a legume in the rotation, especially if the legume is turned under. Barnyard manure supplies nitrogen and potassium but should be supplemented with phosphorus.

Installing artificial drainage would increase the kinds of crops that could be grown successfully and improve the productivity of the soils. The advisability of this procedure and the kind of drainage to be installed would be decided by the cost, the mechanical feasibility, and the other soils on the farm that would be affected. Surface water can be controlled and internal drainage improved by installing diversion ditches to prevent excessive overwash from adjacent slopes, by digging open ditches, or by bedding the soils. Erosion is a factor only on streambanks where scouring occurs.

These productive soils are favorable for pasture because they can be tilled throughout a wide range of moisture conditions. Growth of pasture plants can be increased by applying lime and phosphorus, and their quality improved by seeding bluegrass, orchardgrass, redtop, white clover, and lespedeza. Weeds should be controlled by frequent mowing and by using fertilizers to encourage the stand of grasses. The pasture should not be overgrazed.

Group 3

The soils in management group 3 are the well-drained, nearly level to undulating, cherty or sandy soils of the stream bottoms and colluvial lands that were derived chiefly from materials of limestone origin. The five soils in this group are:

Bruno loamy fine sand.
Ennis cherty silt loam.
Greendale cherty silt loam, undulating phase.
Humphreys cherty silt loam.
Lobelville cherty silt loam.

The soils in this group are fair to good for crops and pasture. They are characterized by chert fragments that interfere with tillage. The Bruno, Ennis, and Lobelville soils occupy stream bottoms and are subject to flooding, whereas the Humphreys and Greendale soils occur on somewhat higher positions. The Greendale soil receives additional material from adjacent slopes.

All of these moderately productive soils are permeable to roots, air, and moisture. During droughts the yields may be reduced by the limited water-supplying capacity of the soils. The content of organic matter and nitrogen is low, and the soils range from slightly to medium acid. Because the soils are nearly level to mildly sloping, the heavier types of farm equipment can be used.

Practically all the acreage of Humphreys, Ennis, Lobelville, and Bruno soils has been cleared for crops and pasture. Nearly all of the Greendale soil in the large main valleys is cleared, though many wooded areas occur in narrow ravines or along lateral drainageways in association with steep sloping land. About 15 percent of the cleared acreage is idle or in farmsteads, feed lots, or home gardens. Many of the farmhouses in the creek valleys are on the Greendale soil. Corn, tobacco, and lespedeza are the main crops, but small grains, vegetables, clover, alfalfa, and sweetclover are grown on small acreages.

Management requirement.—Although these soils are fairly well suited to crops commonly grown in the county, their usefulness is limited by droughts and the presence of chert. The soils on the first bottoms are also limited by occasional floods and, in addition, the Lobelville soil is im-

perfectly drained. Corn, tobacco, lespedeza, red clover, alfalfa, small grains, garden vegetables, and pasture plants can be grown successfully if they are properly fertilized.

The soils in this group differ in their suitability for various crops. For example, alfalfa and possibly the small grains, are not suggested for the Lobelville soil because of floods and imperfect drainage. Alfalfa can be grown on the Humphreys and Greendale soils of the higher terraces. Only summer annuals can be grown on those areas of Bruno, Ennis, and Lobelville soils that are subject to flooding.

The soils of group 3 are well suited to moderately intensive use, but a suitable rotation and commercial fertilizers are necessary to maintain or to increase crop yields. A 3- or 4-year rotation that includes a legume is desirable. A practical rotation would be corn or tobacco, wheat or some other small grain, and then red clover or some other legume. Corn can be grown for several years, if necessary, but green-manure crops should be seeded after the corn is harvested. Crimson clover and vetch are among the suitable cover crops.

These soils are less leached than the associated upland soils, but they have leached more than the soils of group 1. They are somewhat deficient in nitrogen and phosphorus, and probably in potassium. Phosphatic fertilizers are needed to increase the yields of all crops, whereas nitrogen is needed for corn, small grains, and grasses. If legumes and legume mixtures have been properly inoculated, they will require no nitrogen but will need some phosphorus and potassium. Barnyard manure is an excellent source of nitrogen, potassium, and organic matter.

Hay or cover crops do not need additional fertilizer if grown in a short rotation with row crops that are heavily fertilized. In a long rotation the hay crops will be benefited by a topdressing of phosphorus and potassium. These soils are more or less acid, and lime is necessary for good stands of legumes.

These soils are not susceptible to erosion. Tillage should be on the contour, however, on the more sloping areas, and workability would be improved by removing the larger chert fragments.

Most of these soils are suited to pasture. Although early pastures are productive, they are limited late in summer and early in fall by low supplies of moisture. Redtop, bluegrass, orchardgrass, white clover, lespedeza, and red and hop clovers are well suited. Lime and phosphorus are necessary for the maintenance of good pasture. Weeds should be controlled by mowing, and the pastures should not be overgrazed.

Group 4

In management group 4 are well-drained, nearly level to undulating, noncherty soils of the terraces or colluvial lands that were derived from materials mainly of limestone origin. They are:

Humphreys silt loam.
Mountview silt loam, undulating phase.
Mountview silt loam, eroded undulating phase.
Pickwick silt loam, undulating phase.
Pickwick silt loam, eroded undulating phase.
Tigrett silt loam.

Soils of this group are among the most desirable in the county (fig. 9). They are good to excellent for many kinds of crops and pasture and respond to good management. They are moderately to highly productive, easy to till, and moderately easy to conserve. Crops grown on these soils receive adequate moisture except during extended droughts. The soils are permeable to roots, air, and moisture. Surface relief is nearly level to gently sloping and favorable for the use of heavy farm machinery. Erosion is not serious. Soils of group 4 have a reasonably high content of organic matter, plant nutrients, and lime, as compared with soils of the uplands and terraces. Stones and gravel are few or entirely lacking.

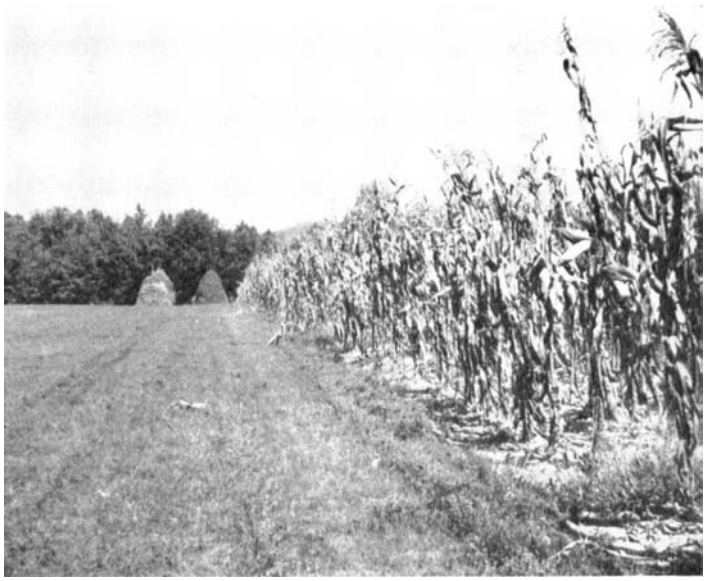

Figure 9.—**Humphreys silt loam on the bottom lands is a good soil for corn and other crops.**

Most of the soils in this group are in farm crops. The areas remaining as woodland are mainly in second-growth oak, with some hickory, maple, yellow-poplar, and other trees. Corn and lespedeza are the main crops. Tobacco, the chief cash group, is generally grown on individual farms in tracts of 3 acres or less. Alfalfa, red clover, crimson clover, oats, wheat, barley, sorghum, sweetpotatoes, small fruit, and vegetables are grown on small acreages.

The soils of group 4 form a convenient management pattern with soils of groups 1, 2, and 3. Group 4 soils are used for general field crops, whereas cleared soils on adjacent slopes may serve as permanent pasture. Such a soil pattern is well suited to combined livestock and field crop farming.

Management requirements.—Soils of this group are suited to moderately intensive use for all the crops commonly grown. Fertilization is essential for some crops, such as alfalfa and red clover, and is necessary for tobacco. Although fair yields can be produced without fertilizer, substantial crop increases are obtained if fertilizer and lime are applied and appropriate rotations are used. Rotations suitable for these soils are similar to those used for soils of group 3.

Good tilth is easily maintained on these soils, and tillage can be carried on over a wide range of moisture conditions. The conservation of soil moisture and control of erosion

are not serious problems if the crops have been properly selected and adequate amounts of fertilizer have been applied. Contour tillage may be desirable in places.

Group 4 soils are well suited to pasture, but moderate applications of lime and phosphorus are needed to maintain heavy yields. Fertilizers should be used to encourage the growth of pasture plants that compete with weeds for nourishment from the soil. Cattle should not be allowed to trample the soils during wet periods and should not be grazed during droughts when a protective cover is needed. These measures usually effectively control weeds, but at times mowing may be necessary to prevent the scattering of weed seeds.

Group 5

Management group 5 consists of the moderately well drained, undulating, siltpan soils of the terraces and uplands that were derived chiefly from loessal materials of limestone origin. Wolftever silt loam was included in this group at the time of the survey, but it is now inundated by Kentucky Reservoir. Part of the Taft soil has been covered by the lake. The four soils now in management group 5 are:

Dickson silt loam, undulating phase.
Dickson silt loam, eroded undulating phase.
Paden silt loam, eroded undulating phase.
Taft silt loam.

The soils of this group are fair to good for crops and pasture. They are easy to work and moderately easy to conserve, but moderate to low in productivity. In the upper part the soils are permeable to air, moisture, and roots, but the siltpan is very slowly permeable. Most of the root system of plants is confined to the upper part of the soils. The water-supplying capacity is relatively low, and these soils tend to be excessively wet during winter and spring and excessively dry during summer and fall. The organic-matter content and the supply of plant nutrients are relatively low. The soils are medium to strongly acid. Heavy farm machinery can be operated on the nearly level to mildly undulating slopes. Erosion is not serious.

Part of the Taft soil is inundated by the Kentucky Reservoir. Most areas of Paden and Taft soils are cleared of timber and used for crops. Some of the Taft soil within the reservoir area controlled by the Tennessee Valley Authority is covered with weeds and brush, whereas other areas are in rotation pasture or used intermittently for general farming.

The Taft soil is associated with Humphreys, Robertsville, and Paden soils and is usually farmed in the same way.

The Paden soil occupies old high terraces or foot slopes and is associated with Mountview, Humphreys, and Greendale soils. Some areas can be farmed as an individual unit; other small areas are managed with the soils adjoining.

About 70 percent of the acreage of Dickson soils is wooded, and about 20 percent is cultivated. The rest is in pasture or idle.

Management requirements.—The soils of group 5 require moderately exacting management. Care should be taken to select the best-adapted crops and rotation and to apply amendments adequate to keep the soils at a high level of production. Corn, tobacco, small grains, lespedeza, sericea lespedeza, and grass hay are well suited. Red clover, soybeans, and garden crops are grown with moderate success, but the siltpan and poor subsoil drainage restrict the root growth of alfalfa and other legumes. Fruit trees cannot develop a normal root system on these soils.

A 3- or 4-year rotation that includes small grains, lespedeza, and corn is satisfactory, but a longer rotation that includes sericea lespedeza probably would keep productivity at a higher level. Wheat, barley, oats, or rye would be a satisfactory grain crop in this rotation. If desired, sorghum or sweetpotatoes can be substituted for corn as the cultivated crop. Crimson clover is a suitable cover crop, and vetch can be grown alone or with grain as a winter annual.

Commercial fertilizers, lime, and barnyard manure are important amendments for these soils. Most crops need phosphorus and potassium, and potassium is especially desirable on legumes and tobacco crops. Lime is essential to legumes and beneficial to other crops in the rotation.

Terracing, stripcropping, or similar practices to control erosion and surface runoff are not needed if other management practices are good. All field operations should be on the contour. Clean-cultivated crops should be followed by a cover crop that will restore organic matter. A plant cover should be on the soils most of the time to prevent leaching of nitrogen and other soluble plant nutrients.

These soils are suited to pasture, but yields will be low because the soils hold an inadequate amount of water and are low in fertility. Pasture can be improved by applying the proper amendments and by selection of suitable plant mixtures. Redtop, fescue, white clover, orchardgrass, lespedeza, and Ladino, alsike, and red clovers are suitable pasture plants. Pastures should be mowed periodically to eradicate weeds, and grazing should be controlled.

Group 6

Management group 6 consists of the well-drained, friable, noncherty soils of the terraces, uplands, and old colluvial lands. The easily eroded soils were derived chiefly from materials of limestone origin. The soils in this group are:

Maury silt loam, eroded rolling shallow phase.
Minvale cherty silt loam, eroded rolling phase.
Mountview silt loam, rolling phase.
Mountview silt loam, eroded rolling phase.
Mountview silt loam, rolling shallow phase.
Mountview silt loam, eroded rolling shallow phase.
Pickwick silt loam, eroded rolling phase.
Talbott-Pickwick silt loams, eroded rolling phases.

This group consists of soils fair to good for crops and fair to very good for pasture. They are well drained, range from medium to high in fertility, and are easy to work but moderately difficult to conserve. All are friable and permeable to roots, air, and moisture. Their capacity for absorbing and retaining moisture is good, but surface runoff is medium to high after heavy rains. The content of lime, nitrogen, and organic matter is low, and the soils are medium to strongly acid. The depth of these soils ranges from shallow to medium. Erosion is a problem un-

der common management, but under improved management, loss of surface soil can be controlled.

Woods cover a greater area in management group 6 than cleared land. Most areas of the rolling phase and rolling shallow phase of Mountview silt loam are in hardwood forest. Some of the soils are used for farm crops or pasture, although a large acreage is idle. Most of the Maury soil is under cultivation or in pasture. Corn and lespedeza are the principal crops, but wheat, red clover, and alfalfa are grown on small acreages. Tobacco is intensively cultivated on small areas and is an important cash crop.

Management requirements.—These soils are suited to such crops as corn, wheat, oats, barley, tobacco, and vegetables. Alfalfa and red clover can be grown if they are properly fertilized.

The soils in this group require more exacting management than those of group 4. They need longer rotations, more fertilizer, and better control of runoff. If other management practices are good, the soils can be maintained in a 4- or 5-year rotation consisting of corn, a small grain, and red clover and grass for 2 or 3 years. A row crop can be substituted for corn in this rotation, and alfalfa can replace red clover if the rotation is lengthened.

These soils are deficient in lime, phosphorus, nitrogen, and possibly potassium. The soils vary in natural fertility and they also have been affected by past management. The Mountview soils are generally deficient in all nutrients, whereas the Maury soil is high in phosphorus. All soils of group 6 except the Maury soil respond to applications of phosphorus. The Maury soil requires fertilizer for vegetables and tobacco.

On soils of this group other than the Maury, legumes, especially alfalfa and red clover, require phosphorus. On all the soils, legumes require lime, but nitrogen is not needed if the legumes have been inoculated. Exacting legume crops, tobacco, and some other crops require potassium if a high level of productivity is to be maintained. An inoculated legume crop will supply enough nitrogen for other crops in the rotation, especially if the legume is turned under.

Good tilth is easily maintained on all but the Talbott-Pickwick soils. Tillage can be carried on over a fairly wide range of moisture conditions but should be on the contour wherever feasible. The soils are susceptible to erosion, but runoff and erosion are not serious if management practices are good. Terraces or other engineering devices are necessary only if a short rotation is to be used. Where terraces are needed, they are easy to install on these deep, permeable, gently sloping soils. Suitable terrace outlets should be available, however.

These soils are well suited to pasture, although some amendments will be required, chiefly lime and phosphorus. Grazing should be controlled. Weed control is not a problem on pasture that has received adequate care, although occasional mowing may be necessary.

Group 7

The soils in management group 7 are the moderately well drained, rolling, siltpan soils of the terraces, old colluvial lands, and uplands. They are not severely eroded, and they were derived chiefly from materials of limestone origin. The soils in this group are:

Dickson silt loam, rolling phase.
Dickson silt loam, eroded rolling phase.
Mercer silt loam, eroded rolling phase.
Paden silt loam, eroded rolling phase.

The soils in management group 7 are poor to fair for crops and pasture. They are moderately easy or easy to work but moderately difficult to conserve. Productivity is moderately low for most crops, as a siltpan or clay layer in the subsoil interferes with free movement of water and restricts normal penetration and growth of roots. Cultivated areas have lost a moderate amount of the original surface layer through erosion. The loss has caused some depletion of organic matter and of nitrogen and other plant nutrients. The soils are medium to strongly acid and low in lime. A small quantity of chert fragments is scattered over the surface or imbedded in the soil material, but the chert does not seriously hinder tillage. The soil material itself is easy to work and keep in good tilth, but the strong slope makes it difficult to till the soils.

All of these soils except Dickson silt loam, rolling phase, have been cleared. The Dickson soil is wooded. Many areas of the eroded Dickson and Paden soils are covered with broomsedge, brush, and native vegetation. They serve as low-quality pasture in places. Lespedeza hay and pasture are the main crops. Tobacco is a cash crop on small acreages.

Management requirements.—Because these soils are comparatively low in natural fertility, have limited water-supplying capacity, and are susceptible to erosion, their suitability for crops is limited. Corn, wheat, oats, tobacco, sweetpotatoes, lespedeza, soybeans, sorghum, grass, and some legumes are grown. Red clover grows fairly well, but alfalfa and fruit trees are not well adapted.

Crop rotations lasting 5 or 6 years should be appropriate for these soils. One suitable rotation consists of corn, a small grain such as wheat, and grass and legumes for 3 or 4 years. Another suitable rotation is corn, wheat, lespedeza, oats, and lespedeza for 2 years. Barley can be substituted for wheat, and sorghum or sweetpotatoes for corn.

Though these soils respond to lime and fertilizers, the effects of these amendments may not be so lasting as on the soils of group 6. Barnyard manure can be used on all crops, and lime and phosphorus are essential for legumes. Lespedeza can be grown without amendments, but yields increase if they are used.

A rotation that includes a soil-protecting crop is needed for the control of runoff. Contour tillage, stripcropping for the longer slopes, and terraces for some areas are practical measures for combating erosion. The soils should not be left bare of vegetation during winter and early in spring. A small grain, crimson clover, vetch, or a similar cover crop should be seeded.

Soils of this group are suitable for pasture, but the quality and yield are low. The fields in broomsedge, briers, weeds, and unpalatable native grasses can be improved by proper seeding and the use of commercial fertilizers and amendments. Suitable plantings would include orchardgrass, fescue, redtop, bluegrass, white clover, lespedeza, and Ladino and red clovers. Grazing should be controlled, as animals trample the sod in wet weather

and deplete the stand by overgrazing in hot, dry weather. Mowing may be necessary for weed control.

Group 8

Management group 8 consists of the poorly drained, nearly level soils of the flood plains and terraces that were derived chiefly from materials of limestone origin. They are:

Melvin silt loam.
Robertsville silt loam.

The soils of this group are fair to good for pasture but poorly suited to cultivated crops. The Melvin soil of the stream bottoms is subject to flooding, whereas the Robertsville soil of the stream terraces is low in fertility and strongly to very strongly acid.

Most of the soils of this group are flooded by Kentucky Reservoir, but the part remaining has been cleared for hay and pasture. Melvin silt loam is used mainly for pasture that includes white clover, alsike clover, ryegrass, bluegrass, and redtop, mixed with native grasses, sedges, and weeds. General farm crops are grown on Robertsville silt loam, and a small acreage is in corn. Individual areas are small, and where they are farmed with adjoining better drained soils they are generally left in permanent pasture or hay. The hayfields consist mainly of lespedeza.

Management requirements.—These poorly drained soils are not well suited to tilled crops; they are better for pasture. Crops planted late in spring or early in summer and harvested in fall, sorghum and soybeans for example, are fairly well suited. The quality of the pasture is poor to fair, but a fair amount is grown from spring to fall. If the drainage can be improved by digging open ditches, constructing diversion channels, installing tile drains, and bedding the drainageways, the Melvin soil can be used for cultivated crops. The cost of artificial drainage probably would not be justified on the Robertsville soil because it has low productivity and a siltpan.

Redtop, fescue, and lespedeza can be grown successfully without amendments, but the quality of the pasture is low. Under improved drainage these plants, as well as bluegrass, orchardgrass, Ladino clover, and white clover, will do fairly well, especially if lime and phosphorus are used. Weeds should be controlled by grazing and mowing.

If effectively drained, the use and management of these soils would be similar to that of the imperfectly drained soils of group 2. Yields would not be so high, particularly on the Robertsville soil.

Group 9

In management group 9 are four well-drained or excessively drained, rolling to steep soils of the uplands that were derived from materials weathered from cherty limestone. They are:

Baxter cherty silt loam, rolling phase.
Baxter cherty silt loam, eroded rolling phase.
Bodine cherty silt loam, rolling phase.
Bodine cherty silt loam, eroded rolling phase.

These cherty upland soils occupy slopes of 5 to 12 percent. Some of the surface layer has been eroded, and the soils are poor to fair for crops and pasture. Numerous large chert fragments impair the workability, although the soil materials are moderately easy to till and moderately easy to moderately difficult to conserve. These deep, permeable, acid soils are moderate to low in organic-matter content, in supply of plant nutrients, and in water-supplying capacity.

Nearly all the acreage is covered with a cutover forest of oak and hickory. The trees grow slowly and produce a small amount of timber of medium to poor quality.

Small cleared areas are widely scattered. Some of the cleared acreage is in pasture, but there are idle fields reverting to broomsedge, weeds, and native plants. Corn, lespedeza, and tobacco are grown in places, but the level of management is low.

Management requirements.—Although the soils in management group 9 are fairly well suited to crops, many are on narrow, winding ridge crests that are inaccessible. Chertiness, low fertility, and low water-supplying capacity further lower their desirability for crop production. Corn, tobacco, soybeans, wheat, oats, legumes, and grass can be grown with moderate success under a high level of management.

A suitable rotation for these soils would consist of corn or tobacco, followed by a small grain such as wheat or oats, and then by a legume hay for about 2 years. Practically all crops need lime, phosphorus, and potassium. Lime is essential for maintaining a stand of legumes, and the legumes should be turned under to supply nitrogen and organic matter for other crops. A cover crop should follow each row crop. If crops are properly rotated and managed, terracing and other erosion-control practices are not needed.

These soils are better for pasture than for crops, especially where they are associated with soils not suited to cultivation. Fair to good pasture can be established and maintained if lime and potassium are applied in substantial amounts. Bluegrass, bermudagrass, redtop, fescue, white clover, orchardgrass, and lespedeza can be grown. Grazing should be carefully controlled, particularly in dry seasons, and the animals occasionally should be moved to other fields to give the grasses a chance to spread. Weeds should be mowed or clipped periodically.

Group 10

In group 10 are the rolling, severely eroded soils of the uplands and high terraces. Mountview soils are well-drained soils of the uplands, and the Paden is a moderately well drained soil of the high terraces. All three are loessal soils, chiefly of limestone origin. The soils are:

Mountview silty clay loam, severely eroded rolling phase.
Mountview silty clay loam, severely eroded rolling shallow phase.
Paden silty clay loam, severely eroded rolling phase.

The soils in this group are poor for crops and poor to fair for pasture. They are moderately easy to till but difficult to conserve. Because they are severely eroded, they are low to very low in organic-matter content, in supply of plant nutrients, and in water-supplying capacity. Nearly all of the original surface layer is gone, and some of the subsoil has been exposed and removed by

erosion. Shallow and deep gullies have been cut in many places.

These soils are permeable to air, moisture, and roots and strongly to very strongly acid. Moisture supplies, however, are low because of the rapid runoff and the low absorptive capacity of the present surface material. Chert fragments are scattered throughout the soil layers, but not in sufficient quantity to interfere with tillage.

All these soils were once cleared for crops and pasture but are now idle or in volunteer grasses. The cover is a thin, irregular stand of broomsedge mixed with weeds, briers, and other native plants, and some lespedeza among these. The pasture is grazed to some extent early in spring, but the yields and quality are very low. Some areas are bare or the vegetation is meager. Small, selected areas are sometimes used for corn and lespedeza.

These eroded soils require very exacting management because they are deficient in organic matter and plant nutrients and are low in water-supplying capacity. Their best use is pasture or forest.

The main management requirements for established pasture are control of weeds and periodic application of lime, phosphorus, and possibly potassium. If these requirements are met, reseeding may not be necessary, and the pasture should improve with age.

New pastures are hard to establish on the soils of management group 10. They have poor tilth, tend to clod and bake, absorb moisture slowly, furnish little water for plants, and are extremely deficient in organic matter and plant nutrients. Check dams may be necessary in places, and diversion ditches or terraces are needed for the gullied soils. Lime, phosphorus, and possibly potassium are needed, and nitrogen probably will be required for a good stand of pasture grasses. Drought-resistant plants should be seeded; lespedeza, bermudagrass, fescue, and sericea lespedeza are among those suitable. After the fertility and moisture-holding level of the soils have been increased, orchardgrass, white clover, and bluegrass may be added to the pasture mixture. The soils can be used for cultivated crops after a few years in well-managed pasture. The management requirements for crops would be similar to those for soils of management group 7.

Group 11

In management group 11 are the well-drained to excessively drained soils of the uplands that were derived from cherty limestone materials. Although hilly, they are not severely eroded. Six soils are in this group:

Baxter cherty silt loam, hilly phase.
Baxter cherty silt loam, eroded hilly phase.
Bodine cherty silt loam, hilly phase.
Bodine cherty silt loam, eroded hilly phase.
Mountview silt loam, hilly shallow phase.
Mountview silt loam, eroded hilly shallow phase.

The soils of group 11 are poor for crops and poor to good for pasture. Strong slopes and stoniness make them hard to work and conserve if used for crops. They are poorly to very poorly suited to tilled crops but fairly well suited to pasture. For all the soils except the Mountview, stoniness interferes with tillage and, in places, almost prohibits cultivation.

The very friable, permeable soils of this group are moderate to low in organic-matter content, in supply of plant nutrients, and in water-supplying capacity. Plants are frequently injured by lack of moisture.

Most of these soils are covered with oak and hickory or other hardwoods. The trees have been cut over many times, and the present stand of sawtimber is small and of low quality. No forest conservation has been practiced.

The irregularly shaped, cleared areas are small and widely distributed. The total acreage is limited, and the farms are generally of the type producing mainly for use of the farm family. Much of the cleared land is covered by broomsedge and scattered briers, brush, and weeds. Corn, tobacco, lespedeza, small grains, and pasture are the main crops. Little of the Bodine acreage is cultivated, as the soils are very low in natural fertility and water-supplying capacity and poorly suited to pasture. The farmland is largely on Baxter and Mountview soils.

Management requirements.—Many of these soils are isolated by large areas that are poorly suited to agriculture. Their suitability for crops is limited by this association, as well as by their chertiness, strong slopes, low water-supplying capacity, and low natural fertility. Unless local necessity requires that these soils be used for intertilled crops, they are better suited to permanent pasture or forest. The Baxter and Mountview soils are capable of supporting good pasture, but the advisability of clearing forest to establish pasture is questionable. A very high level of management is needed to maintain satisfactory pasture on Bodine soils, and they are best used for forest.

Pasture management on these soils requires use of lime and phosphorus, the control of grazing, and eradication of weeds. Nitrogen may be needed to establish new pastures or to renovate pastures that have a low proportion of legumes in the mixture. If properly fertilized, bluegrass, fescue, orchardgrass, redtop, white clover, hop clover, and lespedeza are among the better pasture plants. If the grasses are properly fertilized so they can compete with weeds, and grazing is controlled during wet or very dry periods, it should not be difficult to keep down weeds. Growing an intertilled crop at 7- to 10-year intervals may be necessary to eliminate weeds from some pastures.

Group 12

In management group 12 are the hilly, cherty, severely eroded soils of the uplands. The soils in this group are:

Baxter cherty silty clay loam, severely eroded hilly phase.
Baxter cherty silt loam, steep phase.
Baxter cherty silt loam, eroded steep phase.
Bodine cherty silt loam, steep phase.
Bodine cherty silt loam, eroded steep phase.
Mountview silty clay loam, severely eroded hilly shallow phase.
Stony steep land, Baxter soil material.

The soils in management group 12 are on the steepest uplands in the county; slopes range to 60 percent or more. Stoniness, strong slopes, low fertility, or severe erosion largely preclude use of these soils for crops or pasture. Numerous chert fragments are scattered over the surface and throughout the profile. Outcrops and nearly vertical

bluffs of cherty limestone occur along some of the valley slopes. The soils have low supplies of organic matter and plant nutrients and are strongly acid. They are permeable to air and moisture, and normal root development takes place. Surface runoff is very rapid, and the amount of rainfall absorbed and retained is low.

Most of the soils in this management group are in mixed hardwood forest. Cleared eroded areas cover a small acreage. Some cleared areas are idle; others are used with associated soils for pasture. The pastures are composed of broomsedge and other native plants intermixed with weeds, brush, and briers.

Management requirements.—The best use of these soils is forest, and about 90 percent of their acreage is covered by mixed hardwoods. The forest is not well managed, and a program of reforestation should be conducted as suggested in the section, Woodland Management.

These soils are not suited to crops and pasture, although some farmers are forced to use them for these purposes because they do not have enough acreage of better soils to provide a livelihood. Where tilled crops must be grown, adequate lime and fertilizer, particularly phosphorus, should be applied. Good water management is needed to control erosion and to conserve moisture. A good plant cover should be maintained as much of the time as possible to hold the soils in place. A high percentage of legumes should be used in the hay and pasture mixtures. All tillage should be done on the contour, and stripcropping is advisable for most slopes. Application of fertilizer and other amendments, as well as the control of weeds, is difficult on these steep, stony, inaccessible soils.

Estimated Yields

Table 7 gives, for each soil, estimated yields to be expected from various crops grown in Houston County. In columns A are yields to be expected under ordinary management, and in columns B are yields under the best practical management the farmers in the county could be expected to follow. Yields are not given for the soils entirely submerged by Kentucky Reservoir.

The yields in columns A are based largely on observations made by the survey party and the experience of local farmers and agricultural workers. Where available, crop yield data by soil type, extending over a period of years, were used in making the estimates.

The yields in columns B are to be expected under better management than that commonly practiced at the time of the survey. Good management refers to the proper choice and rotation of crops; the correct use of lime, commercial fertilizers, and manure; use of proper tillage methods; the return of organic matter to the soil; and the use of engineering methods of water control, where necessary. The estimates are based largely on the judgment of men who have had experience with the soils and crops of the county and who can anticipate the responses these crops will make if known soil deficiencies are corrected to the extent that practical farming will permit.

The various deficiencies and strong points of the soils are discussed in the section, Use and Management of Soils, where the soils are placed in 12 management groups and the management requirements of each group are given.

The yields listed in columns B can be thought of as production goals that generally can be reached by using all feasible practices of soil and crop management. The same goal probably can be reached on most soils by more than one combination of management practices. Some practices may supplement or replace others, whereas certain practices are essential and should not be omitted. The best choice of a sound management program for an individual farm is based on the whole farm organization. On one farm it may be feasible and desirable to manage a soil in such a way that the yield of a given crop exceeds the goal. On another farm, with the same soil and the same crop, circumstances may be such that it will be more practical not to reach the goal.

The yields listed in columns B, when compared with those listed in columns A, will give an idea of the response that may be expected when a good, practical system of soil management is followed.

Capability Groups of Soils

The capability grouping is a practical way to show the comparative suitability of different soils for crops, grazing, trees, wildlife, and other uses. It also sums up the risks of erosion or other soil damage, and the difficulties in using the soil. Farmers find the capability groupings helpful in planning for soil and water conservation.

Eight broad classes are provided in the capability grouping although all classes do not occur in Houston County. Each soil is placed in one of the classes after its responses to use have been studied by several persons who know the soils and the agriculture of the area.

Soils that are easy to farm and are widely adaptable are placed in capability class I. Such soils are least subject to erosion, drought, wetness, or other limitations. They are fairly fertile and good for many uses. The farmer can use his class I soils for crops without special practices, other than those generally needed for good farming. He can use one of several cropping systems; or if he wishes, he may use the soil for pasture, trees, or other purposes.

Soils are placed in class II if they are a little less widely adaptable, and thus are more limited than those in class I. For example, an undulating soil that is subject to slight erosion requires contour farming or other practices to control runoff. Other soils may be placed in class II because they are too droughty, too wet, or too shallow to be placed in class I. Climate may be a limiting factor if it is too cool or too dry, but it is not limiting in Houston County.

Class III contains the soils that are suitable for regular cropping, but have more exacting management requirements than those in class II. Soils that are even more limited and have more narrow crop adaptations than those in class III, but are suitable for tillage part of the time, or with special precautions, are placed in class IV.

Soils not suitable for cultivation, or on which cultivation is not advisable, are in classes V, VI, VII, or VIII.

TABLE 7.—*Average acre yields of principal crops to be expected over a period of years on the soils of Houston County, Tenn., under (A) ordinary management, and (B) good management*

Soil	Corn		Wheat		Lespedeza		Alfalfa		Red clover		Sorghum		Tobacco		Pasture		Management groups
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
	Bu.	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Gal.*	*Gal.*	*Lb.*	*Lb.*	*Cow-acre-days*[1]	*Cow-acre-days*[1]	
Baxter cherty silt loam:																	
Hilly phase	(2)	(2)	(3)	14	(3)	1.1	(3)	1.5	(3)	1.3	(2)	(2)	(2)	(2)	(3)	75	11
Eroded hilly phase	(2)	(2)	7	13	0.6	1.0	(2)	1.4	(2)	1.2	(2)	(2)	(2)	(2)	45	70	11
Baxter cherty silty clay loam, severely eroded hilly phase	(2)	(2)	(2)	(2)	.4	.8	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	30	68	12
Baxter cherty silt loam:																	
Steep phase	(2)	(2)	(2)	(2)	(3)	.9	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	65	12
Eroded steep phase	(2)	(2)	(2)	(2)	.5	.8	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	40	60	12
Rolling phase	(3)	38	(3)	16	(3)	1.3	(2)	1.7	(2)	1.5	(3)	(3)	(3)	1,100	(3)	85	9
Eroded rolling phase	18	35	10	15	.7	1.2	(2)	1.5	(2)	1.4	(3)	(3)	800	1,000	50	80	9
Bodine cherty silt loam:																	
Steep phase	(2)	(2)	(2)	(2)	(2)	.8	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	40	12
Eroded steep phase	(2)	(2)	(2)	(2)	.5	.7	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	15	35	12
Hilly phase	(2)	(2)	(2)	(2)	(3)	.9	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	50	11
Eroded hilly phase	(2)	(2)	(2)	(2)	.4	.8	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	20	45	11
Rolling phase	(3)	28	(3)	14	(3)	1.0	(2)	(2)	(3)	1.3	(3)	(3)	(3)	900	(3)	55	9
Eroded rolling phase	10	25	(3)	12	.5	.9	(2)	(2)	(2)	1.2	(3)	(3)	(2)	800	25	50	9
Briensburg silt loam	25	45	12	16	1.1	1.5	(2)	(2)	(3)	1.5	80	100	1,000	1,400	80	120	2
Bruno loamy fine sand	20	35	(2)	(2)	.5	.8	(2)	(2)	(3)	(3)	60	70	(3)	(3)	50	70	3
Dickson silt loam:																	
Undulating phase	(3)	43	(3)	21	(3)	1.4	(2)	(2)	(3)	1.6	(3)	95	(3)	1,600	(3)	115	5
Eroded undulating phase	25	40	12	20	.9	1.3	(2)	(2)	1.0	1.5	70	90	1,000	1,500	60	110	5
Rolling phase	(3)	38	(3)	18	(3)	1.3	(2)	(2)	(3)	1.5	(3)	65	(3)	1,300	(3)	110	7
Eroded rolling phase	20	35	10	16	.8	1.2	(2)	(2)	.9	1.4	40	60	800	1,200	50	100	7
Ennis silt loam	40	65	(3)	18	1.3	1.6	(2)	(2)	(3)	1.8	80	100	1,100	1,500	100	140	1
Ennis cherty silt loam	30	45	(3)	16	1.2	1.4	(2)	(2)	(3)	1.5	70	90	1,000	1,300	80	110	3
Greendale cherty silt loam, undulating phase	30	40	12	18	1.2	1.4	2.0	3.0	1.0	1.6	60	80	1,100	1,900	80	120	3
Humphreys silt loam	35	60	15	23	1.2	1.6	2.5	3.2	1.2	2.0	70	100	1,100	2,000	90	130	4
Humphreys cherty silt loam	30	40	12	18	1.0	1.4	2.0	2.8	1.0	1.5	60	80	1,000	1,800	80	120	3
Lobelville silt loam	30	50	(2)	15	1.0	1.5	(2)	(2)	(2)	1.5	75	100	(2)	1,100	80	130	2
Lobelville cherty silt loam	28	40	(2)	14	.9	1.3	(2)	(2)	(2)	1.2	70	95	(2)	1,000	75	100	3
Maury silt loam, eroded rolling shallow phase	30	50	15	25	1.0	1.5	2.5	3.2	1.0	1.8	(3)	(3)	1,000	1,400	80	110	6
Melvin silt loam	15	40	(2)	(2)	.6	1.2	(2)	(2)	(2)	(2)	70	100	(3)	(3)	50	120	8
Mercer silt loam, eroded rolling phase	20	35	11	20	.9	1.4	(2)	2.8	(2)	1.6	(3)	(3)	1,000	1,500	60	100	7
Minvale cherty silt loam, eroded rolling phase	28	43	12	18	.8	1.1	1.6	2.6	1.0	1.5	(3)	(3)	1,000	1,500	85	115	6
Mountview silt loam:																	
Undulating phase	(3)	48	(3)	21	(3)	1.5	(3)	3.0	(3)	1.7	(3)	(3)	(3)	1,600	(3)	115	4
Eroded undulating phase	25	45	12	20	.9	1.4	2.0	2.9	1.2	1.6	(3)	(3)	1,000	1,500	90	110	4
Rolling phase	(3)	42	(3)	20	(3)	1.4	(3)	2.9	(3)	1.6	(3)	(3)	(3)	1,500	(3)	110	6
Eroded rolling phase	22	40	11	18	.8	1.3	1.9	2.8	1.1	1.5	(3)	(3)	900	1,400	85	105	6
Mountview silty clay loam, severely eroded rolling phase	10	(2)	(2)	(2)	.7	1.0	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	30	65	10
Mountview silt loam:																	
Rolling shallow phase	(3)	40	(3)	20	(3)	1.3	(3)	2.7	(3)	1.5	(3)	(3)	(3)	1,400	(3)	105	6
Eroded rolling shallow phase	20	38	11	18	.8	1.2	1.8	2.6	1.0	1.4	(3)	(3)	800	1,300	70	100	6
Mountview silty clay loam, severely eroded rolling shallow phase	(2)	(2)	(2)	(2)	.6	.9	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	25	65	10
Mountview silt loam:																	
Hilly shallow phase	(2)	(2)	(2)	(2)	(3)	1.1	(3)	2.3	(3)	(2)	(3)	(3)	(2)	(2)	(3)	95	11
Eroded hilly shallow phase	(2)	(2)	(2)	(2)	.7	1.0	(2)	2.2	(2)	(2)	(2)	(2)	(2)	(2)	60	90	11
Mountview silty clay loam, severely eroded hilly shallow phase	(2)	(2)	(2)	(2)	.5	.8	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	20	60	12
Paden silt loam:																	
Eroded undulating phase	25	40	12	20	.9	1.3	(2)	(2)	1.0	1.5	70	90	1,000	1,500	60	110	5
Eroded rolling phase	20	35	10	16	.8	1.2	(2)	(2)	.9	1.4	40	60	800	1,200	50	100	7
Paden silty clay loam, severely eroded rolling phase	10	(2)	(2)	(2)	.5	.9	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	30	60	10
Pickwick silt loam:																	
Undulating phase	35	55	16	23	1.3	1.6	2.2	3.4	1.3	2.0	(3)	(3)	1,100	1,900	105	145	4
Eroded undulating phase	32	50	15	22	1.2	1.5	2.0	3.2	1.2	1.8	(3)	(3)	1,200	1,800	100	140	4
Eroded rolling phase	30	45	13	20	.9	1.2	1.8	2.8	1.0	1.6	(3)	(3)	1,100	1,600	90	125	6
Robertsville silt loam	15	30	(2)	(2)	.5	.9	(2)	(2)	(2)	(2)	60	90	(2)	(2)	30	70	8
Stony steep land, Baxter soil material	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	12
Taft silt loam	20	35	(2)	(2)	.8	1.3	(2)	(2)	(3)	1.5	60	95	(3)	1,200	50	85	5
Talbott-Pickwick silt loams, eroded rolling phases	18	35	14	18	.9	1.3	1.5	2.5	1.0	1.6	(3)	(3)	900	1,400	75	110	6
Tigrett silt loam	40	60	12	18	1.2	1.6	2.2	3.0	1.5	2.0	(3)	(3)	1,000	2,000	90	130	4

[1] Cow-acre-days is the number of days 1 acre will graze a fully grown cow without injury to the pasture.
[2] Crop is not commonly grown and the soil is considered very poorly suited to its production.
[3] Crop is not commonly grown, but soil is physically suited to its production, although less well-suited than to crops for which yields are given.

Class V consists of soils not subject to erosion but unsuited to cultivation because of stoniness, standing water, or frequent overflow. Class VI contains the soils that are steep, droughty, or shallow but will produce fairly good quantities of forage, or orchard and forest products. As a rule, class VI soils should not be cultivated, but some can be disturbed enough to prepare them for planting trees or seeding long-producing forage crops.

Soils in class VII are more limited than those in class VI, require more care in handling, and usually give only fair to poor yields of forage or wood products. Class VIII consists of soils so severely limited that they produce little useful vegetation. They may provide attractive scenery, or may be parts of useful watersheds. Some have value for wildlife.

SUBCLASSES: Although the soils within a single capability class present use and management problems of about the same degree, the kinds of problems may differ greatly because the soils are different. These problems and limitations of different soils may be caused by erosion, designated by the symbol (e), excess water (w), and low moisture capacity or low fertility (s).

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All the soils of Houston County except those entirely submerged by Kentucky Reservoir are listed by class and subclass as follows:

Soil name:	*Capability class and subclass*
Baxter cherty silt loam:	
Rolling phase	IIe.
Eroded rolling phase	IIe.
Hilly phase	IVe.
Eroded hilly phase	IVe.
Steep phase	VIe.
Eroded steep phase	VIe.
Baxter cherty silty clay loam, severely eroded hilly phase.	VIe.
Bodine cherty silt loam:	
Rolling phase	IVe.
Eroded rolling phase	IVe.
Hilly phase	VIe.
Eroded hilly phase	VIe.
Steep phase	VIIe.
Eroded steep phase	VIIe.
Briensburg silt loam	IIw.
Bruno loamy fine sand	IVs.
Dickson silt loam:	
Undulating phase	IIe.
Eroded undulating phase	IIe.
Rolling phase	IIIe.
Eroded rolling phase	IIIe.
Egam silty clay loam	IIw.
Ennis silt loam	I.
Ennis cherty silt loam	IIs.
Greendale cherty silt loam, undulating phase	IIs.
Humphreys silt loam	I.
Humphreys cherty silt loam	IIe.
Huntington silt loam	I.
Lindside silt loam	IIw.
Lobelville silt loam	IIw.
Lobelville cherty silt loam	IIw.
Maury silt loam, eroded rolling shallow phase	IIIe.
Melvin silt loam	IIIw.
Mercer silt loam, eroded rolling phase	IIIe.
Minvale cherty silt loam, eroded rolling phase	IIIe.
Mountview silt loam:	
Undulating phase	IIe.
Eroded undulating phase	IIe.
Rolling phase	IIIe.
Eroded rolling phase	IIIe.
Rolling shallow phase	IIIe.
Eroded rolling shallow phase	IIIe.
Hilly shallow phase	IVe.
Eroded hilly shallow phase	IVe.
Mountview silty clay loam:	
Severely eroded rolling phase	IVe.
Severely eroded rolling shallow phase	IVe.
Severely eroded hilly shallow phase	VIe.
Paden silt loam:	
Eroded undulating phase	IIe.
Eroded rolling phase	IIIe.
Paden silty clay loam, severely eroded rolling phase	IVe.
Pickwick silt loam:	
Undulating phase	IIe.
Eroded undulating phase	IIe.
Eroded rolling phase	IIIe.
Robertsville silt loam	IVw.
Stony steep land, Baxter soil material	VIIs.
Taft silt loam	IIIw.
Tigrett silt loam	IIe.
Talbott-Pickwick silt loams, eroded rolling phases	IIIe.
Wolftever silt loam	IIe.

Woodland Management[3]

The early settlers found practically all of what is now Houston County covered with a dense forest, principally hardwoods. It is evident that stands of pine were on some of the well-drained soils in the valleys and intermixed with the deciduous hardwoods.

About 75 percent of the county is wooded. Some areas have been cut over many times, and the stand of sawtimber is generally scant and of poor quality. Many cleared areas are reverting to forest, but the quality of the stand is low. Other cleared fields that are reverting to pasture of native grasses, briers, brush, vines, and weeds could be better used as woodland. The economy of the county could be strengthened by good forest management.

Good forest management should include (1) protection of the trees from fire, trampling, and other causes of damage, (2) systematic cutting and harvesting, and (3) maintenance of a full stand of desirable species.

Control of fires is necessary for good tree growth, maximum soil porosity, and erosion control. Grazing on wooded areas reduces the growth of young seedlings needed for revegetation. Furthermore, grazing is harmful to livestock unless they get supplemental feed (7). Livestock pack down the soil, disturb the humus, and thus reduce the porosity and water-absorbing capacity of the soil.

Insects, diseases, and blights harm the forests. To some extent these can be controlled by removing diseased and infested trees. Furthermore, the cutover forests of Houston County contain many cull trees which, if removed, would allow potential timber species to develop. Short, crooked, bushy-topped, unsound, and slow-growing trees should be cut for fuel or pulpwood.

Areas that have been severely damaged by fire can be planted to loblolly, shortleaf, or Virginia pines, which are more valuable for commercial purposes than most hardwoods. The blackjack-hardwood forest that occupies the most severe growing sites could be converted eventually to coniferous growth by planting these species. Hardwood sprouts should be controlled by chemical sprays until the pine has had time to become established.

Selective cutting would greatly increase timber production. Harvesting "two-tie" trees rather than "one-tie" trees is desirable. A two-tie tree that is 16 inches in diameter at breast height (d. b. h.) matures in 80 years or less, whereas a one-tie tree, 12 inches d. b. h., grows in 60 years or less. Thus, it takes three-fourths as long to produce a one-tie tree as a two-tie tree.

An acre of woodland might well support 200 trees of various ages, ranging from 2 to 16 inches d. b. h. If a management program of replenishing the stand is conducted, in the first 10 years it would be possible to harvest 25 of the largest trees per acre that would yield 2 cross ties each, or an average harvest of 2½ trees annually. Time is required to convert an unmanaged forest to a managed forest, but field studies indicate that 80 years or less are required in this area to grow a 16-inch (d. b. h.) tree. Differences in the soil and site affect the growing time.

Natural reforestation will take place if the young stand is protected from fire and from grazing by livestock. On most areas, however, planting of desirable seedlings will be necessary, especially on the badly eroded soils. Some advance preparation of the land is essential. Breaking and mulching eroded areas, building low check dams of brush in gullies, and plowing contour furrows may be needed. Forest-tree seedlings are provided without cost by the Tennessee Valley Authority for areas within the

[3] Prepared by G. B. Shivery, extension forester, University of Tennessee.

valley. For areas outside the drainage area of the valley, seedlings are sold at nominal cost by the Forestry Division, Tennessee State Department of Conservation.

Species that suit the characteristics of the soil—its slope, erosion, exposure, and so on—should be chosen. Many farmers prefer black locust because it can be used for fence posts, but pine is better suited to the severe growing conditions on lands used for forest. Loblolly pine will grow quickly and control erosion on the severely eroded hilly soils. Where some surface soil remains, loblolly pine makes rapid initial growth.

In addition to the production of wood, forests have indirect benefits. A protective layer of forest litter absorbs the impact of rain and preserves the tiny pores and channels between the soil particles. Fungi, bacteria, and tiny animals that consume the forest litter and feed on each other produce humus, which improves the physical structure and fertility of the soil. The litter and humus have, in addition, great ability to absorb water directly. Porosity is further increased by the channels left when dead roots decay. The soil-binding function of the surface roots is highly beneficial, but the densest root development is in the lower part of well-developed layers of litter.

Experiments conducted at the erosion station near Statesville, N. C. (*6*), and similar experiments at Zanesville, Ohio (*5*), show that erosion control and moisture absorption are greater under forest cover than on cultivated land or pasture. Soils forested with old-growth timber are more porous and absorb water more rapidly than soil in cultivated fields. When forest cover is properly maintained, second-growth forested soil does not lose its porosity unless it is overgrazed or the litter is destroyed by fire (*2*).

Soil Associations

Soils occur in characteristic positions on the landscape and in fairly uniform geographic patterns. The Bodine soils, for example, occur on the cherty ridges of the uplands and are generally associated with the Greendale soil. The Ennis soils lie on the stream bottoms and are often associated with the Lobelville soil of the first bottoms and the Humphreys soils of the low terraces.

By grouping soils that are geographically associated, it is possible to prepare a generalized map showing the areas dominated by each group of such associated soils. On such a basis, the soils of Houston County fall in four main areas, called soil associations. Each association has boundaries as shown on the colored soil association map in this report. The soil associations in Houston County are the Bodine-Mountview-Greendale-Ennis, the Dickson-Mountview-Briensburg, the Baxter-Mountview-Greendale-Ennis, and the Maury-Mercer-Talbott.

A soil association may consist of only a few or of many soils. The soils may be similar or highly different, but in each soil association there is a uniformity of soil pattern. Although the soils are closely associated geographically, they are not necessarily alike in their suitability for agriculture. The particular association in which a soil occurs may have a great influence on its present or potential use and, consequently, on its importance to the agriculture of the area. For example, a soil suitable for corn may not be planted to that crop if the surrounding soils are better suited to some other crop.

A brief discussion of each soil association area follows. Detailed information about the component soils of each association is given in the section, Soils of Houston County.

Bodine-Mountview-Greendale-Ennis

This association covers 63.6 percent of the county. It is in the highly dissected eastern and southern parts and extends westward to the Tennessee River. It is characterized by narrow, winding ridges, and deep, steep-walled V-shaped valleys (fig. 10). Mountview soils normally occur on the ridge crests; Bodine soils on the ridge slopes; Greendale or Paden soils on the sloping alluvial-colluvial fans; gently sloping Humphreys soils on the low stream terraces; and Ennis soils on the narrow stream bottoms. Some areas of Dickson soils are on the broader, gently sloping ridge crests. Bodine soils may occur on the narrow ridge crests or points of broader ridges, but Mountview soils replace them on the less steep ridge slopes. Small areas of Lobelville, Melvin, Taft, and Robertsville occur on the low terraces and first bottoms.

The area covered by this association is large, but the total acreage suited to crops is very small. Most of the uplands soils are members of the Bodine series, which is unsuited to crops or pasture because of steepness, chertiness, and low fertility. Mountview soils, and some areas of Dickson on the narrow ridge crests, are physically suited to crops or pasture, but they are generally isolated by large areas not suited to farming. A few of the broader areas are cleared, but the ridge crests are mainly in forest.

Most of the crops and pastures are on the Greendale, Ennis, Paden, and Humphreys soils of the bottoms, terraces, and colluvial lands. These soils are fertile and

Figure 10.—**Well-managed farm in the Bodine-Mountview-Greendale-Ennis soil association: Pickwick soils in foreground; Greendale soil along intermittent drainageway; and Bodine and Mountview soils on steeper slopes.**

productive, but in many places they contain so many chert fragments that cultivation is difficult.

The upland hardwood forest type, with local areas of blackjack oak-hardwoods, is on practically all the uplands of this association. Among the species represented are white, post, black, scarlet, Southern red, chestnut, blackjack, and Northern red oaks, dogwood, and pignut and white hickories. There is a scattering of winged elm, blackgum, slippery elm, black cherry, sourwood, sassafras, and an occasional persimmon, redcedar, sugar maple, or sumac. On lower slopes are species such as sweetgum, black walnut, white ash, shagbark hickory, white elm, and sugar maple. Minor species are beech, redbud, thornapple, hornbeam, basswood, yellow-poplar, and mulberry. Sycamore, ironwood, and a smaller growth of Carolina buckthorn, privet, and hawthorn are in the hollows and ravines. On the north- and east-facing slopes, Northern red oak, white oak, sugar maple, black walnut, yellow-poplar, basswood, and beech are included, but on the drier southern and western slopes are sourwood, chestnut, scarlet, blackjack, and post oaks, blackgum, and other trees that are generally of lower quality than they are on the more productive sites.

Nearly all of the valley soils have been cleared, as they support the farming done in this association. The farms are small to medium in size and range from small general type to the type producing mainly for the farm family. Tobacco, corn, and lespedeza are grown extensively, although small acreages are in vegetables, potatoes, wheat, oats, clover, and alfalfa. Poultry, dairy cows, and hogs are raised to meet home needs. Small surpluses are sold. Small herds of beef cattle are kept on a few farms, but tobacco is the principal source of cash income. Forest products contribute substantially to the income of many farmers, but the largest wooded tracts are not on the farmlands.

Land use is well adjusted to the suitability of the soils, but management is below the level required to obtain the greatest yields. The soils of the valleys, which make up most of the cleared areas, are suited to fairly intensive use for crops. The valley soils are mainly the Greendale, Humphreys, and Ennis.

The area suited to crops is very small on the individual farms. The economic status of the farmer correlates closely with the size of the farm. Few of the soils are used to their full capacity, and greater production could be achieved if the farms were better managed. The use of more and better fertilizers, winter legumes, and new and improved crop varieties, as well as better tillage practices, would help to increase and maintain crop yields. As markets develop, a shift to crops of higher cash value is to be expected.

Dickson-Mountview-Briensburg

This soil association occupies 4.4 percent of the land in the county. It occurs on the broader, less dissected parts of Tennessee Ridge. It is undulating to rolling and surrounded by highly dissected hilly or steep areas. In contrast to the Bodine-Mountview-Greendale-Ennis association, this association is relatively chert-free. Dickson soils are the most extensive and occupy the broader, smoother parts. Mountview soils occur on most of the stronger slopes, although some areas of Bodine soils are on the short, steep slopes. The Briensburg soil occurs along most of the small drainageways and at the base of slopes. Small areas of Greendale and Tigrett soils occur in the colluvial positions.

Practically all of the soils of this association are physically suited to crops and pasture. Soils of low to medium productivity are the most extensive, but those on the bottom and colluvial lands are more important to agriculture. The acreage of soils unsuited to agriculture is very small.

Much of this association is in an upland hardwood forest similar to that on the Bodine-Mountview-Greendale-Ennis association. Mixed oaks and hickories are dominant. Scarlet, black, blackjack, and chestnut oaks, and white hickory, blackgum, sourwood, and redbud occupy the dry slopes. White oak, Northern red oak, black walnut, white ash, sugar maple, and yellow-poplar grow on the moist sites.

Much of the land in this association is used for crops and pasture. A subsistence type of farming is practiced. The farms are generally too small to provide a high standard of living. Many of the cleared areas are eroded and are lying idle. The most successful farms are in general crops or support a combination of livestock raising and growing of field crops. Corn and lespedeza, the most valuable crops, are grown on most farms. Tobacco is a source of cash income. Cattle, hogs, poultry, dairy products, and tree fruits furnish some income. Red and crimson clovers are grown successfully on a small acreage but normally are not grown as part of a crop rotation. Most farms of this association need balanced use and management that includes adequate use of lime and fertilizer.

Baxter-Mountview-Greendale-Ennis

This association covers about 31.5 percent of the county. It lies in the northeastern part, an area deeply dissected, but less dissected than that covered by the Bodine-Mountview-Greendale-Ennis association. The ridges are broader and ridge slopes are generally less steep (fig. 11). The soils were derived from a higher grade of cherty limestone, and the dominant color is red instead of yellow.

Mountview soils typically occur on the rolling ridge crests; Baxter soils on the steep ridge slopes; Greendale, Pickwick, and Paden soils on the colluvial-alluvial footslopes; Humphreys soils on the low, gently sloping terraces; and Ennis soils on the nearly level flood plains. In the less dissected part, Dickson soils may be on the broader ridge crests and the Mountview soils on the ridge slopes. Baxter soils are generally on the very narrow ridge crests and the points of broader ridges. Some small areas of poorly and imperfectly drained Melvin and Lobelville soils are associated with the Ennis soils on the first bottoms.

A large part of the upland in this association is under hardwood forest, but more of the upland has been cleared than in the Bodine-Mountview-Greendale-Ennis association. Much of the cleared area is idle, however, and has been invaded by brush.

This association is less dissected than the Bodine-Mountview-Greendale-Ennis association; consequently the different plant species are scattered over wider areas. Also, because a greater percentage of the land has been cleared,

Figure 11.—**Corn and hay crops on Ennis and Lobelville soils in the Baxter-Mountview-Greendale-Ennis soil association. The farm buildings are on Greendale soil; the pasture on Baxter cherty silt loam, eroded steep phase; and forests on the steep Baxter soils.**

the forest is on steeper slopes and rougher terrain. The quality of the timber is better than on Bodine-Mountview-Greendale-Ennis association, and the trees grow faster. The main forest species are white, post, black, scarlet, and Eastern red oaks, pignut and white hickories, and black walnut, white ash, yellow-poplar, blackgum, sugar maple, beech, and redcedar. There are occasional stands of blackjack oak, persimmon, sourwood, and redbud. Among the smaller species are dogwood, privet, sassafras, chestnut oak, basswood, Southern red oak, and hophornbeam.

Practically all of the soils on the first bottoms, terraces, and colluvial slopes have been cleared. Nevertheless, some long, narrow areas of Greendale soil extend into the wooded uplands. On most of the uplands the soils are poorly suited to tilled crops, and the ridge crests are generally only fair for agriculture. Some of the soils on the steeper slopes are very poorly suited to agriculture. The soils on stream terraces and flood plains are predominantly good to excellent for tilled crops and permanent pasture. They are at least moderately productive of most crops commonly grown in the area.

The acreage of soils suited to tilled crops is small, but a large acreage is suited to pasture. Soils on the ridge crests are physically suited to crops, but they occupy long narrow areas that are generally surrounded by stony or shallow soils too poor for crops or pasture. The ridge-crest areas are best treated in the same manner as the associated ridge slopes. Those areas of Greendale soil surrounded by steep, rocky, forested soils canot be used efficiently for crops or pasture.

Farms on this soil association vary in size, but the acreage suited to crops is generally small. Most of the timber is on the farms. Subsistence, general, and combined livestock-and-field crop farms are most common. There are fewer farms of the subsistence type than on the Bodine-Mountview-Greendale-Ennis association.

Corn and lespedeza are grown extensively. Tobacco is a valuable cash crop that is limited to a very small acreage. Small grains are grown but are not a major crop. Some of the upland soils are in pasture, though the forage is generally of poor quality. The best pasturage is obtained on soils of stream bottoms and terraces where crop rotation is practiced. Hogs, cattle, sheep, and poultry are grown for home use, and the surplus is marketed. A few farmers market large numbers of livestock.

The soils are fairly well suited to the systems of farming practiced, but management is at a fairly low level. Better crop rotations should be used, and proper fertilization and careful tillage practices are needed. Because of the large acreage of potential pasture in the uplands, the farmers on this association have a better opportunity to develop a livestock enterprise than do those on the Bodine-Mountview-Greendale-Ennis association. Some satisfactory pastures seen on the Baxter and Mountview soils indicate that these soils may be well suited to pasture.

Maury-Mercer-Talbott

This very small association, 0.5 percent of the county, is confined to the basin of Wells Creek. About half of it lies on the level to undulating Wells Creek flood plains and terraces. The uplands consist of rolling or strongly rolling ridges and strongly sloping foot slopes leading up to the surrounding steep cherty ridges. Maury soil occurs on the higher parts of the ridges, and Mercer soil on the lower. There is a complex association of Pickwick and Talbott soils on the foot slopes. Humphreys soils are on the low terraces, and Ennis or Lobelville soils on the first bottoms.

Maury soil is productive and has physical properties favorable for cropping. Talbott and Mercer soils have heavy, plastic subsoils that make them hard to conserve and till. Many areas of these soils are eroded, and this increases the management problem. They are well suited to hay and pasture. Soils on the bottom lands and low terraces are well suited to intensive cropping. Considered as a whole, this association has soils fair to good for tilled crops and excellent for permanent pasture, with an admixture of soils poor for tilled crops and fair for permanent pasture.

A few large farms are on this association. Corn, hay, and tobacco are the major cultivated crops; raising beef cattle is the chief livestock enterprise. The combination of fertile crop soils and good pasture soils makes this association well suited to livestock farming.

The soils in this association are generally used for the crops to which they are best suited, but yields could be increased by using proper rotations, contour tillage, fertilizer and lime, and other supporting practices. The upland soils would improve the most under such management. Removal of brush and weeds would improve the pasture.

Soil Survey Methods and Definitions

The scientist who makes a soil survey examines the soils in the field, classifies the soils in accordance with facts

that he observes, and maps their boundaries on the aerial photograph or other map.

Field study.—The soil surveyor bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern, but are located according to the lay of the land. Usually they are not more than a quarter of a mile apart, and sometimes they are much closer. In most soils such a boring or hole reveals several distinct layers, called horizons, which collectively are known as the soil profile. Each layer is studied to see how it differs from others in the profile and to learn the things about the soil that influence its capacity to support plant growth.

Color is usually related to the amount of organic matter. The darker the surface soil, as a rule, the more organic matter it contains Streaks and spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

Texture, or the content of sand, silt, and clay, is determined by the way the soil feels when rubbed between the fingers and is later checked by laboratory analysis. Texture determines how well the soil retains moisture, plant nutrients, and fertilizer and whether it is easy or difficult to cultivate.

Structure, which is the way the individual soil particles are arranged in larger grains, and the amount of pore space between grains, gives us clues to the ease or difficulty with which the soil is penetrated by plant roots and by moisture.

Consistence, or the tendency of the soil to crumble or to stick together, indicates whether it is easy or difficult to keep the soil open and porous under cultivation.

Other characteristics observed in the course of the field study and considered in classifying the soil include the following: The depth of the soil to bedrock, cemented or compact layers, or loose gravel strata; the presence of gravel or stones in amounts that will interfere with cultivation; the steepness and pattern of slopes and the degree of erosion; the surface runoff of water, drainage through the soil, and occurrence of a high ground water table; nature of the underlying rocks or other material from which the soil has developed; and acidity or alkalinity of the soil as measured by chemical tests.

Simple chemical tests show how acid the soil may be. The reaction of a soil is its degree of acidity or alkalinity expressed mathematically as the pH value. A pH value of 7 indicates precise neutrality; higher values, alkalinity; and lower values, acidity. The degree of acidity or alkalinity is expressed in words and pH values as follows (*12*):

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6–7.3
Very strongly acid	4.5–5.0	Mildly alkaline	7.4–7.8
Strongly acid	5.1–5.5	Moderately alkaline	7.9–8.4
Medium acid	5.6–6.0	Strongly alkaline	8.5–9.0
Slightly acid	6.1–6.5	Very strongly alkaline	9.1 and higher

Classification.—On the basis of the characteristics observed by the survey team or determined by laboratory tests, soils are classified into phases, types, and series. The soil type is the basic classification unit. A soil type may consist of several phases. Types that resemble each other in most of their characteristics are grouped into soil series.

Soil type.—Soils similar in kind, thickness, and arrangement of soil layers are classified as one soil type.

Soil phase.—Because of differences other than those of kind, thickness, and arrangement of layers, some soil types are divided into two or more phases. Slope variations, frequency of rock outcrops, degree of erosion, depth of soil over the substratum, type of drainage (natural or artificial), and presence of excess soluble salts are examples of characteristics that suggest dividing a soil type into phases.

The soil phase (or the soil type if it has not been subdivided) is the unit shown on the soil map. It is the unit that has the narrowest range of characteristics. Use and management practices therefore can be specified for the soil phase more easily than for soil series or yet broader groups that contain more variation.

Soil series.—Two or more soil types that differ in surface texture, but that are otherwise similar in kind, thickness, and arrangement of soil layers, are normally designated as a soil series. In a given area, however, it frequently happens that soil series is represented by only one soil type. Each series is named for a place near which the soil was first mapped. Thus, Dickson is the name of a soil series that occurs over cherty limestone in Houston County. It was first recognized near the town of Dickson in adjoining Dickson County.

Miscellaneous land types.—Steep rocky mountainsides, which have little or no true soil, are not classified into types and series. They are identified by descriptive names such as Stony steep land, Baxter soil material.

Soil complex.—When two or more soils are so intricately associated in small areas that it is not feasible to show them separately on the soil map, they are mapped together and called a soil complex. Talbott-Pickwick silt loams, eroded rolling phases, is a soil complex mapped in this county.

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U. S. GOVERNMENT PRINTING OFFICE: 1958

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C.

SOILS OF HOUSTON COUNTY, TENNESSEE:

Soil	Map symbol	Slope range	Parent rock or parent material	Drainage
		Percent		
Baxter cherty silt loam, hilly phase	Bc	12–25	Residuum of cherty limestone	Well drained
Baxter cherty silt loam, eroded hilly phase	Bd	12–25	Same	Well drained
Baxter cherty silty clay loam, severely eroded hilly phase.	Bg	12–25	Same	Well drained
Baxter cherty silt loam, steep phase	Be	25–60	Same	Well drained
Baxter cherty silt loam, eroded steep phase	Bf	25–60	Same	Well drained
Baxter cherty silt loam, rolling phase	Ba	5–12	Same	Well drained
Baxter cherty silt loam, eroded rolling phase	Bb	5–12	Same	Well drained
Bodine cherty silt loam, steep phase	Bn	25–60+	Residuum of very cherty limestone or chert.	Excessively drained
Bodine cherty silt loam, eroded steep phase	Bo	25–60	Same	Excessively drained
Bodine cherty silt loam, hilly phase	Bl	12–25	Same	Excessively drained
Bodine cherty silt loam, eroded hilly phase	Bm	12–25	Same	Excessively drained
Bodine cherty silt loam, rolling phase	Bh	5–12	Same	Excessively drained
Bodine cherty silt loam, eroded rolling phase	Bk	5–12	Same	Excessively drained
Briensburg silt loam	Bp	2– 5	Colluvium, mainly loess material	Imperfectly drained
Bruno loamy fine sand	Br	0– 3	Alluvium, mainly sandy material	Well to excessively drained.
Dickson silt loam, undulating phase	Da	2– 5	Loess underlain by cherty limestone.	Moderately well drained.
Dickson silt loam, eroded undulating phase	Db	2– 5	Same	Moderately well drained.
Dickson silt loam, rolling phase	Dc	5–12	Same	Moderately well drained.
Dickson silt loam, eroded rolling phase	Dd	5–12	Same	Moderately well drained.
Egam silty clay loam [1]	Ea	0– 3	Mixed alluvium, chiefly limestone material.	Moderately well drained.
Ennis silt loam	Ec	0– 3	Alluvium, mainly cherty limestone material.	Well drained
Ennis cherty silt loam	Eb	0– 3	Same	Well drained
Greendale cherty silt loam, undulating phase	Ga	2– 5	Alluvial-colluvial material, mainly cherty limestone.	Moderate to well drained.
Humphreys silt loam	Hb	1– 5	Alluvium, mainly cherty limestone material.	Well drained
Humphreys cherty silt loam	Ha	1– 5	Same	Well drained

Footnote at end of table, page 48.

SUMMARY OF IMPORTANT CHARACTERICTICS

Soil profile			Remarks	Management group
Surface soil color	Subsoil			
	Color	Consistence		
Pale brown or brown	Yellowish red to red	Moderately firm	Cherty soil	11
Pale brown or yellowish brown	Same	Moderately firm	Cherty soil	11
Pale brown to yellowish red	Same	Moderately firm	Cherty soil	12
Pale brown or brown	Same	Moderately firm	Cherty soil	12
Pale brown or yellowish brown	Same	Moderately firm	Cherty soil	12
Grayish brown, or pale brown to brown.	Same	Moderately firm	Cherty soil	9
Pale brown or yellowish brown	Same	Moderately firm	Cherty soil	9
Brownish gray or grayish brown	Light yellowish brown, brownish yellow or yellowish brown.	Friable	Very cherty and infertile.	12
Brownish gray or yellowish gray	Same	Friable	Same	12
Brownish gray or grayish brown	Same	Friable	Same	11
Brownish gray or yellowish gray	Same	Friable	Same	11
Brownish gray or grayish brown	Same	Friable	Same	9
Brownish gray or yellowish gray	Same	Friable	Same	9
Grayish brown or brown	Brownish gray or light brown, mottled.	Friable	Very small areas	2
Same	Brown or yellowish brown	Very friable	Droughty soil	3
Brownish gray to light yellowish brown.	Yellowish brown to brownish yellow.	Friable	Siltpan soil	5
Brownish gray to yellowish brown.	Same	Friable	Siltpan soil	5
Brownish gray to light yellowish brown.	Same	Friable	Siltpan soil	7
Brownish gray to yellowish brown.	Same	Friable	Siltpan soil	7
Dark brown to dark grayish brown.	Dark grayish brown to dark yellowish brown.	Moderately compact	Flooded soil	
Grayish brown, brown, or dark brown.	Brown	Friable	Susceptible to flooding.	1
Grayish brown or brown	Brown	Friable	Cherty soil	3
Same	Light yellowish brown to yellowish brown.	Friable	Cherty soil	3
Same	Brown to dark yellowish brown.	Friable	Very important crop soil.	4
Grayish brown, brown, or pale brown.	Same	Friable	Cherty soil	3

SOILS OF HOUSTON COUNTY, TENNESSEE:

Soil	Map symbol	Slope range	Parent rock or parent material	Drainage
		Percent		
Huntington silt loam [1]	Hc	0– 3	Mixed alluvium, chiefly limestone material.	Well drained
Lindside silt loam [1]	La	0– 3	Same	Imperfectly drained
Lobelville silt loam	Lc	0– 3	Alluvium, mainly cherty limestone material.	Imperfectly drained
Lobelville cherty silt loam	Lb	0– 3	Same	Imperfectly drained
Maury silt loam, eroded rolling shallow phase	Ma	5–15	Residuum of phosphatic sandy limestone interbedded with siltstone.	Well drained
Melvin silt loam	Mb	0– 3	Alluvium, limestone materials	Poorly drained
Mercer silt loam, eroded rolling phase	Mc	4–16	Residuum of phosphatic clayey limestone and shale.	Moderately well drained.
Minvale cherty silt loam, eroded rolling phase	Md	5–12	Alluvial-colluvial material, mainly cherty limestone material.	Well drained
Mountview silt loam, undulating phase	Me	2– 5	Loess or loess and cherty limestone residuum.	Well drained
Mountview silt loam, eroded undulating phase	Mf	2– 5	Same	Well drained
Mountview silt loam, rolling phase	Mg	5–12	Same	Well drained
Mountview silt loam, eroded rolling phase	Mh	5–12	Same	Well drained
Mountview silty clay loam, severely eroded rolling phase.	Mo	5–12	Same	Well drained
Mountview silt loam, rolling shallow phase	Mk	5–12	Same	Well drained
Mountview silt loam, eroded rolling shallow phase.	Ml	5–12	Same	Well drained
Mountview silty clay loam, severely eroded rolling shallow phase.	Mp	5–12	Same	Well drained
Mountview silt loam, hilly shallow phase	Mm	12–25	Same	Well drained
Mountview silt loam, eroded hilly shallow phase.	Mn	12–25	Same	Well drained
Mountview silty clay loam, severely eroded hilly shallow phase.	Mr	12–25	Same	Well drained
Paden silt loam, eroded undulating phase	Pa	2– 5	Loess over alluvium, chiefly limestone.	Moderately well drained.
Paden silt loam, eroded rolling phase	Pb	5–12	Same	Moderately well drained.

Footnote at end of table, page 48.

SUMMARY OF IMPORTANT CHARACTERISTICS—Continued

Soil profile			Remarks	Management group
Surface soil color	Subsoil			
	Color	Consistence		
Brown or dark brown	Brown or light brown	Friable	Flooded soil	
Brown to grayish brown	Brownish gray to grayish brown.	Friable	Flooded soil	
Brown, grayish brown, or brownish gray.	Grayish brown to light yellowish brown, mottled.	Friable	Periodic flooding.	2
Same	Same	Friable	Cherty soil	3
Brown to dark brown	Strong brown or yellowish brown.	Moderately firm	A phosphatic soil.	6
Gray, light gray, or brownish gray.	Light gray	Moderately friable	Susceptible to flooding.	8
Brown or grayish brown	Brownish yellow or yellowish brown.	Moderately firm to firm.	A phosphatic soil.	7
Grayish brown to pale brown	Reddish yellow to yellowish red.	Friable	Cherty soil	6
Pale brown to grayish brown	Yellowish brown or brownish yellow.	Friable	Thin loess over cherty limestone.	4
Pale brown to yellowish brown	Yellowish brown or brownish yellow.	Friable		4
Pale brown to grayish brown	Yellowish brown or brownish yellow.	Friable		6
Pale brown to yellowish brown	Yellowish brown or brownish yellow.	Friable		6
Same	Yellowish brown or brownish yellow.	Friable	Severely injured by erosion.	10
Pale brown to grayish brown	Yellowish brown or brownish yellow.	Friable		6
Pale brown to yellowish brown	Yellowish brown or brownish yellow.	Friable		6
Same	Yellowish brown or brownish yellow.	Friable	Severely injured by erosion.	10
Pale brown to grayish brown	Yellowish brown or brownish yellow.	Friable		11
Pale brown to yellowish brown	Yellowish brown or brownish yellow.	Friable		11
Same	Yellowish brown or brownish yellow.	Friable	Severely injured by erosion.	12
Pale brown to grayish brown or brown.	Yellowish brown	Friable	A siltpan soil on terraces.	5
Grayish brown to yellowish brown.	Yellowish brown	Friable	Same	7

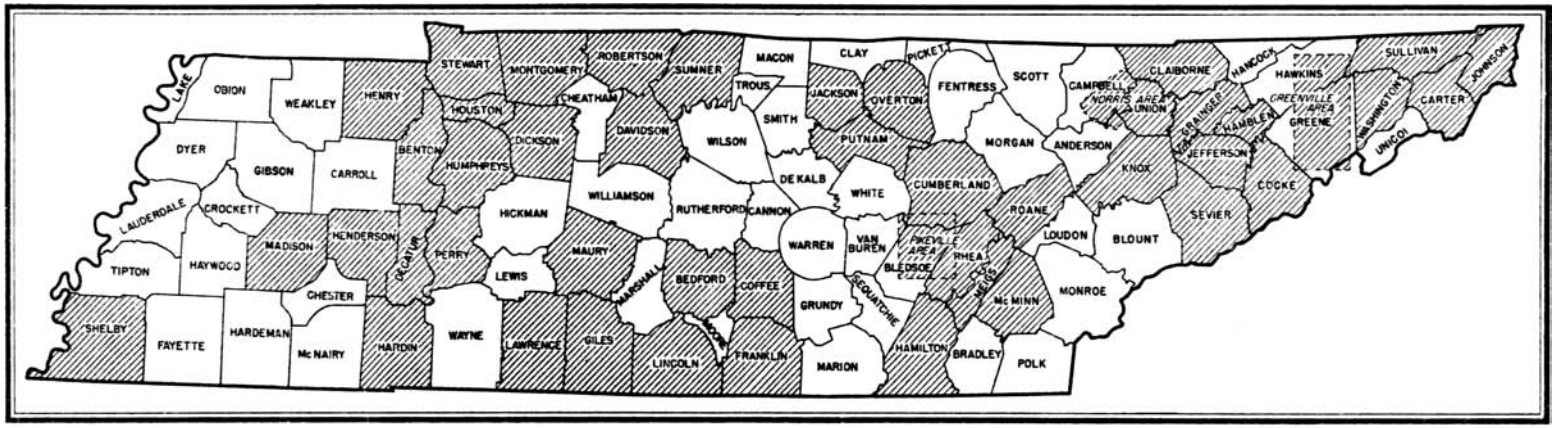
SOILS OF HOUSTON COUNTY, TENNESSEE:

Soil	Map symbol	Slope range	Parent rock or parent material	Drainage
		Percent		
Paden silty clay loam, severely eroded rolling phase.	Pc	5–12	Same	Moderately well drained.
Pickwick silt loam, undulating phase	Pd	2– 5	Same	Well drained
Pickwick silt loam, eroded undulating phase	Pe	2– 5	Same	Well drained
Pickwick silt loam, eroded rolling phase	Pf	5–12	Same	Well drained
Robertsville silt loam	Ra	0– 3	Mixed alluvium, chiefly limestone material.	Poorly drained
Stony steep land, Baxter soil material	Sa	25–60+	A land type characterized by numerous limestone outcrops.	
Taft silt loam	Ta	0– 3	Mixed alluvium, chiefly limestone material.	Imperfectly drained
Talbott-Pickwick silt loams, eroded rolling phases.	Tb	5–12	Residuum of clayey limestone and local alluvium, mainly loess material.	Well drained
Tigrett silt loam	Tc	2– 8	Colluvium, mainly loess material.	Well drained
Wolftever silt loam [1]	Wa	2– 7	Mixed alluvium, chiefly limestone material.	Moderately well drained.

[1] Soils that have been flooded by the Kentucky Reservoir.

SUMMARY OF IMPORTANT CHARACTERISTICS—Continued

Soil profile			Remarks	Management group
Surface soil color	Subsoil			
	Color	Consistence		
Same	Yellowish brown	Friable	Severely injured by erosion.	10
Brown to dark brown	Brown to yellowish red	Friable		4
Brown to yellowish brown	Same	Friable	On high terraces	4
Same	Same	Friable		6
Gray or brownish gray	Light gray	Compact		8
				12
Brownish gray to light brown	Brownish yellow to pale yellow, mottled.	Friable	A siltpan soil	5
A complex association of eroded Talbott and Pickwick soils.				6
Dark brown to dark grayish brown.	Brown to yellowish brown	Friable	Very small areas	4
Brown or grayish brown	Yellowish brown to brownish yellow.	Firm, moderately compact.	Flooded soil	



Areas surveyed in Tennessee shown by shading.

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