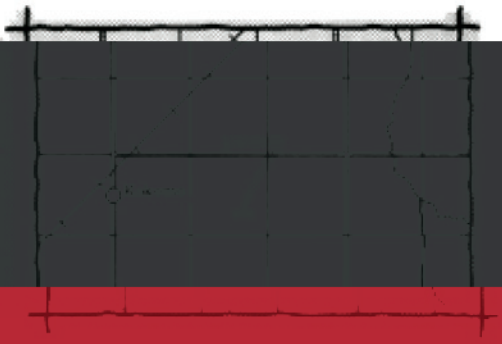
SOIL SURVEY OF

Choctaw County, Oklahoma

United States Department of Agriculture
Soil Conservation Service
in cooperation with
Oklahoma Agricultural Experiment Station

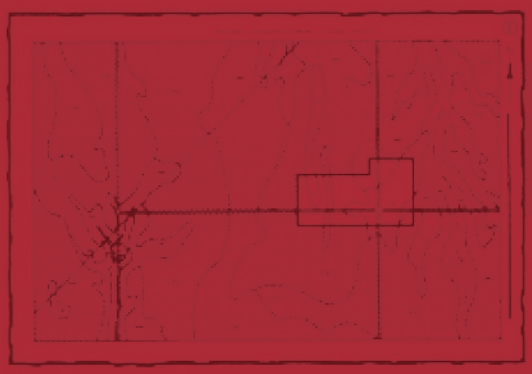
HOW TO USE

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

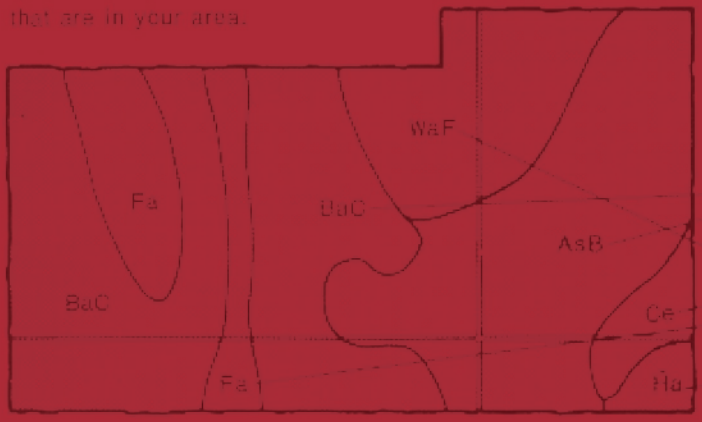


2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



4. List the map unit symbols that are in your area.

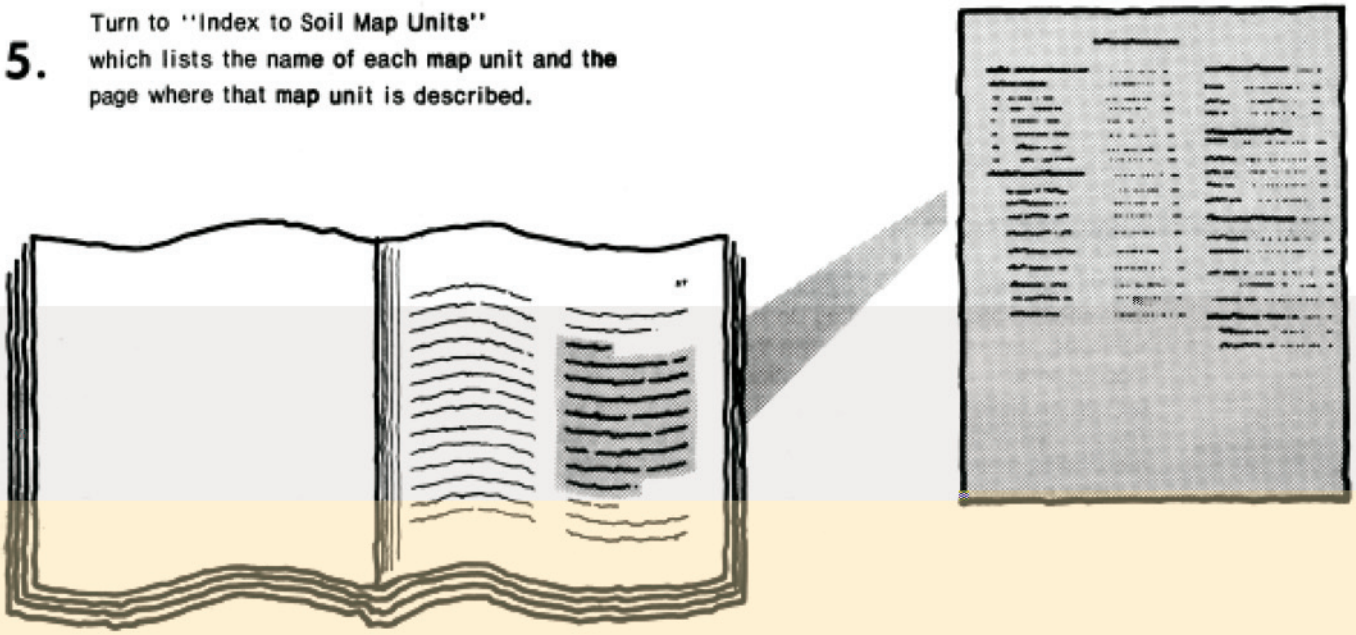


Symbols

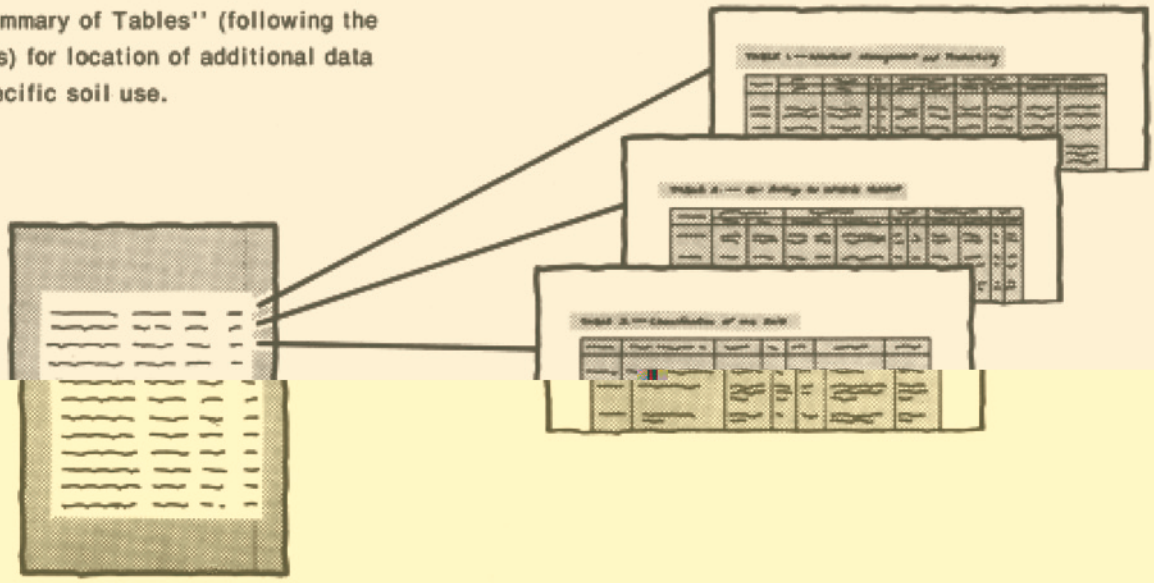
AsB
BaC
Ce
Fa
Ha
WaF

THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1971-75. Soil names and descriptions were approved in 1977. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1977. This survey was made cooperatively by the Soil Conservation Service and the Oklahoma Agricultural Experiment Station. It is part of the technical assistance furnished to the Kiamichi Conservation District and Valliant Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps can cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Contents

Index to map units

Summary of tables

Summary of tables—Continued

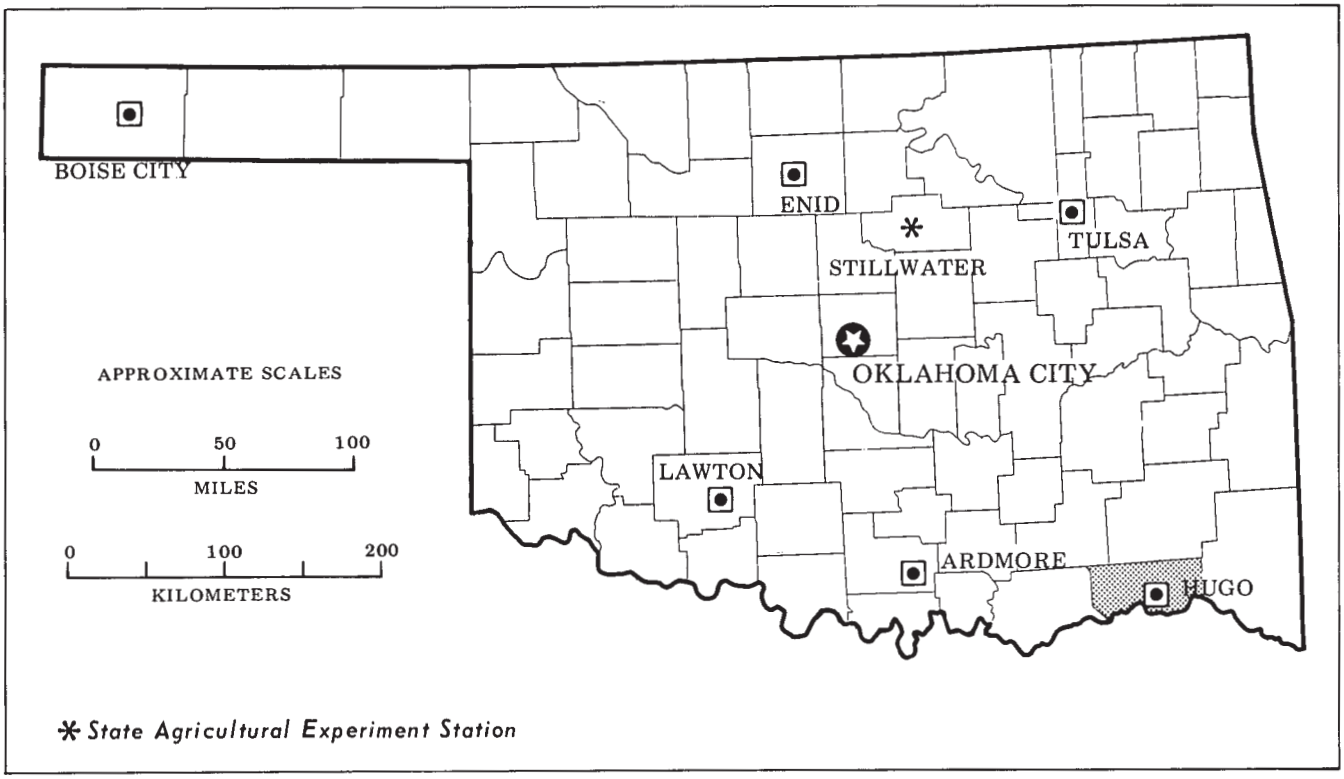
Foreword

The Soil Survey of Choctaw County contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

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

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the



Location of Choctaw County in Oklahoma.

SOIL SURVEY OF CHOCTAW COUNTY, OKLAHOMA

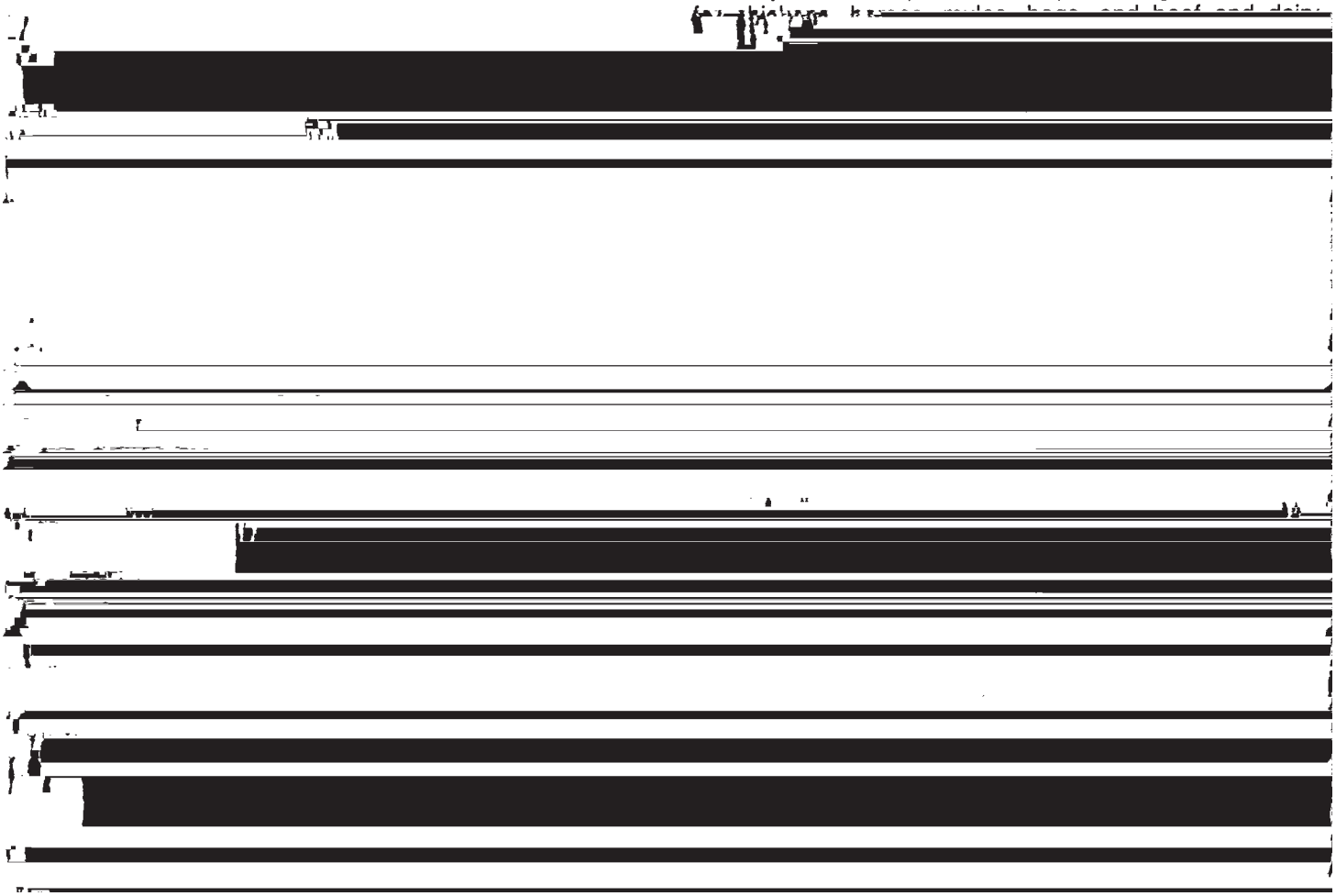
By Billy G. Swafford and Robert C. Reasoner, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service,
in cooperation with Oklahoma Agricultural Experiment Station

CHOCTAW COUNTY is in the southeastern part of Oklahoma. It is bounded on the north by Atoka and Pushmataha Counties, on the east by McCurtain County, and on the west by Bryan County in Oklahoma and by Lamar and Red River Counties in Texas. It has an area of 795 square miles, or about 508,800 acres. Hugo is the county seat.

were on the rolling timbered soils. Land could also be leased for farming subject to the supervision of the Indian Agency. The sale or lease of the land brought white settlers into the county.

Most of the early settlers farmed on small subsistence acreages. Timbered areas were first cleared. Cotton, grain sorghum, peanuts, small grain, and alfalfa hay were the major cash crops. Other crops were grown as feed



long narrow areas paralleling the Kiamichi River. The gravel is used mainly for concrete aggregate and road construction.

Limestone, the most common surface mineral in the area, is mined in the northern part of the county for roads and for commercial and agricultural purposes. In some areas this mineral is of excellent quality for agricultural lime.

Wildlife and game are abundant. Deer, quail, dove, rabbit, and duck are hunted in season. Ducks have a resting area along the Red River and Hugo Reservoir.

Clear running streams, small ponds, and lakes attract thousands of visitors each year. The Hugo Reservoir provides recreational facilities in spring and summer.

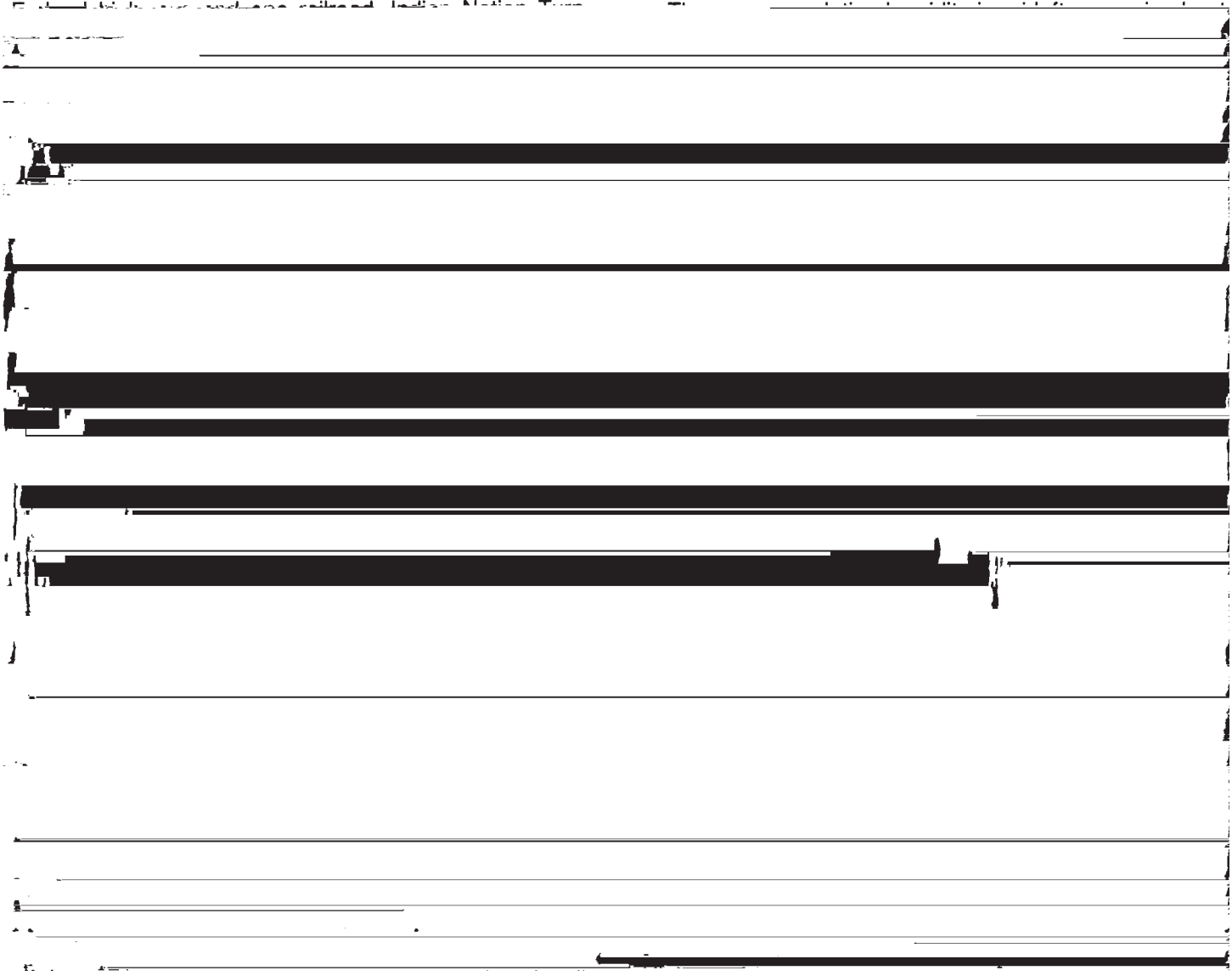
Transportation and industry

Choctaw County is served by a network of State and

accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 28 inches, or 60 percent, usually falls during the period April through September, which includes the growing season for most crops. Two years in ten, the April-September rainfall is less than 22 inches. The heaviest 1-day rainfall during the period of record was 6.18 inches at Antlers on October 31, 1972. Thunderstorms number about 50 each year, 18 of which occur in summer.

Average seasonal snowfall is 3 inches. The greatest snow depth at any one time during the period of record was 6 inches. On the average, 1 day has at least 1 inch of snow on the ground, but the number of days varies greatly from year to year.



individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are

planning the management of a farm or field or for selecting a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

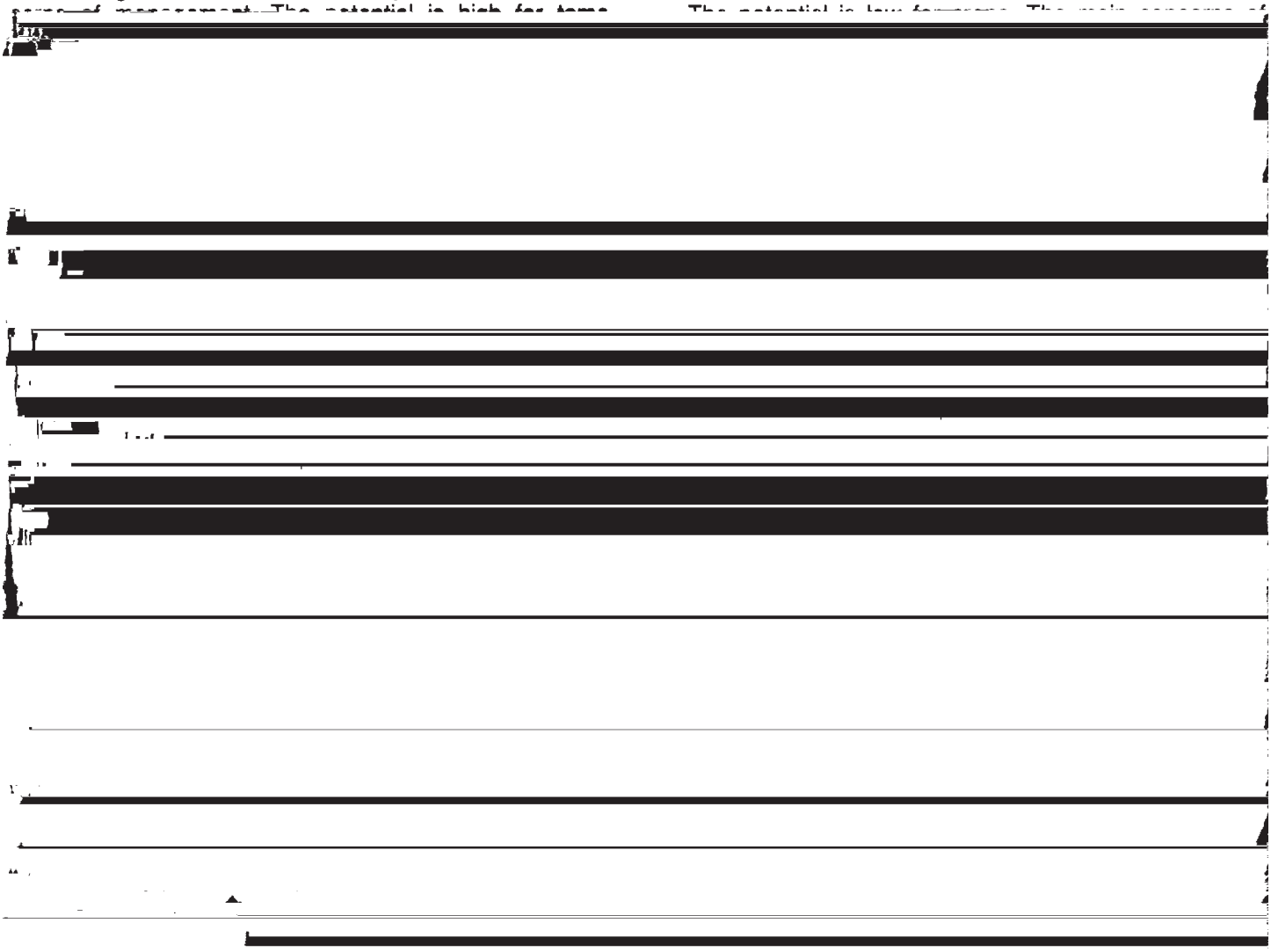
The soils in the survey area vary widely in their potential for major land uses. The ratings of soil potential are based on the assumption that practices in common use in the survey area are being used to overcome soil

land use planning" and "Soil maps for detailed plan-

the soil limitations and the probability of soil problems

The potential is only medium for crops. The soils respond favorably if well managed. Controlling erosion and maintaining soil structure and fertility are the chief con-

and severely eroded areas have been reseeded to pine. The soils are well suited to recreation uses and wildlife habitat.



pasture and medium for native grass and woodland.

The potential is only medium for most urban uses. The high shrink-swell potential of Bosville soils and the wetness of Muskogee soils are the main limitations for most urban uses.

2. Clebit-Tuskahoma

Shallow, strongly sloping, well drained and moderately well drained loamy soils

This unit consists of soils formed in material weathered from sandstone and shale under trees and an understory of grass. It makes up about 1 percent of the county. It is about 35 percent Clebit soils, 19 percent Tuskahoma soils, and 46 percent Ruston, Smithdale, and Tenaha soils. All are on uplands.

Clebit soils are shallow, strongly sloping, and well

management are controlling erosion and maintaining soil structure and fertility. The soils respond favorably to good management. Potential is high for tame pasture and medium for native grass and woodland.

Potential is medium for most urban uses. The depth to rock in Tenaha soils and the slope of Smithdale soils are the main limitations for most urban uses.

Areas dominated by nearly level to moderately steep clayey and loamy soils on uplands

The two units in this group make up about 23 percent of Choctaw County. The soils are used mainly for native grass and tame pasture. They are used less extensively for field crops. They do not support trees.

This unit consists of soils that formed under a cover of grass in material weathered from limestone and clayey sediments. It makes up about 16 percent of the county. It is about 45 percent Hollywood soils, 32 percent Swink soils, and 23 percent Burleson, Durant, Ferris, Heiden, Lula, Newtonia, and Panola soils. All are on uplands.

Hollywood soils are deep, very gently sloping to sloping, and well drained. They are clayey throughout the profile. They are on broad smooth ridges and side slopes.

Swink soils are very shallow and shallow, very gently sloping to moderately steep, and well drained. They are

The potential is only medium for crops. The chief concerns of management are controlling wetness, protecting the Boggy soils from flooding, and maintaining soil fertility and structure. The soils respond to fertilizer and other good management. The potential is high for tame pasture and low for native grass. It is also high for woodland.

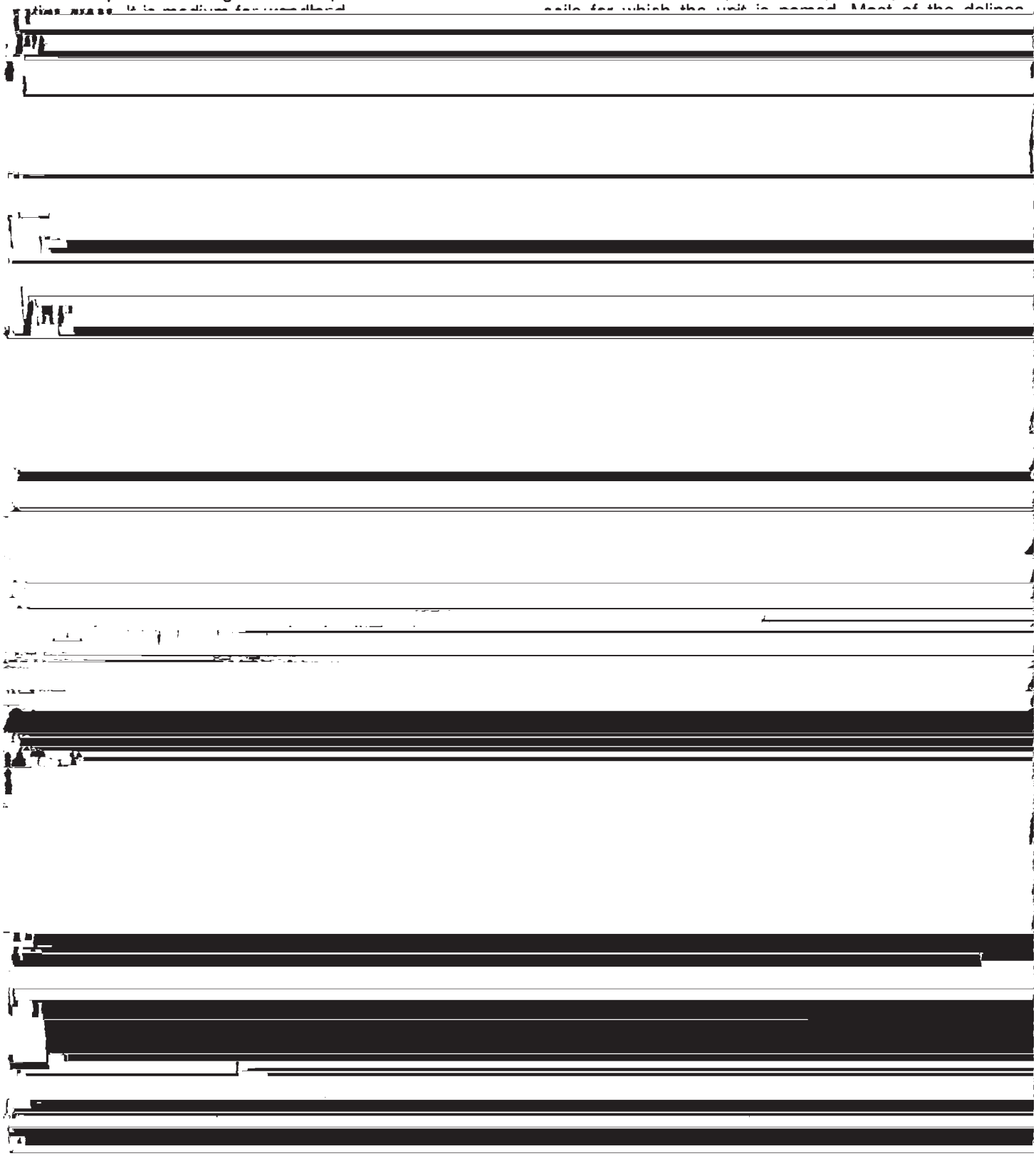
The potential is low for most urban uses. Flooding is the main limitation.

7. Hopco-Trinity

Deep, nearly level, somewhat poorly drained loamy and

periods. The soils respond favorably to good management. The potential is high for tame pasture and low for [redacted]. It is medium for woodland.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or [redacted]. Most of the delines



[redacted]

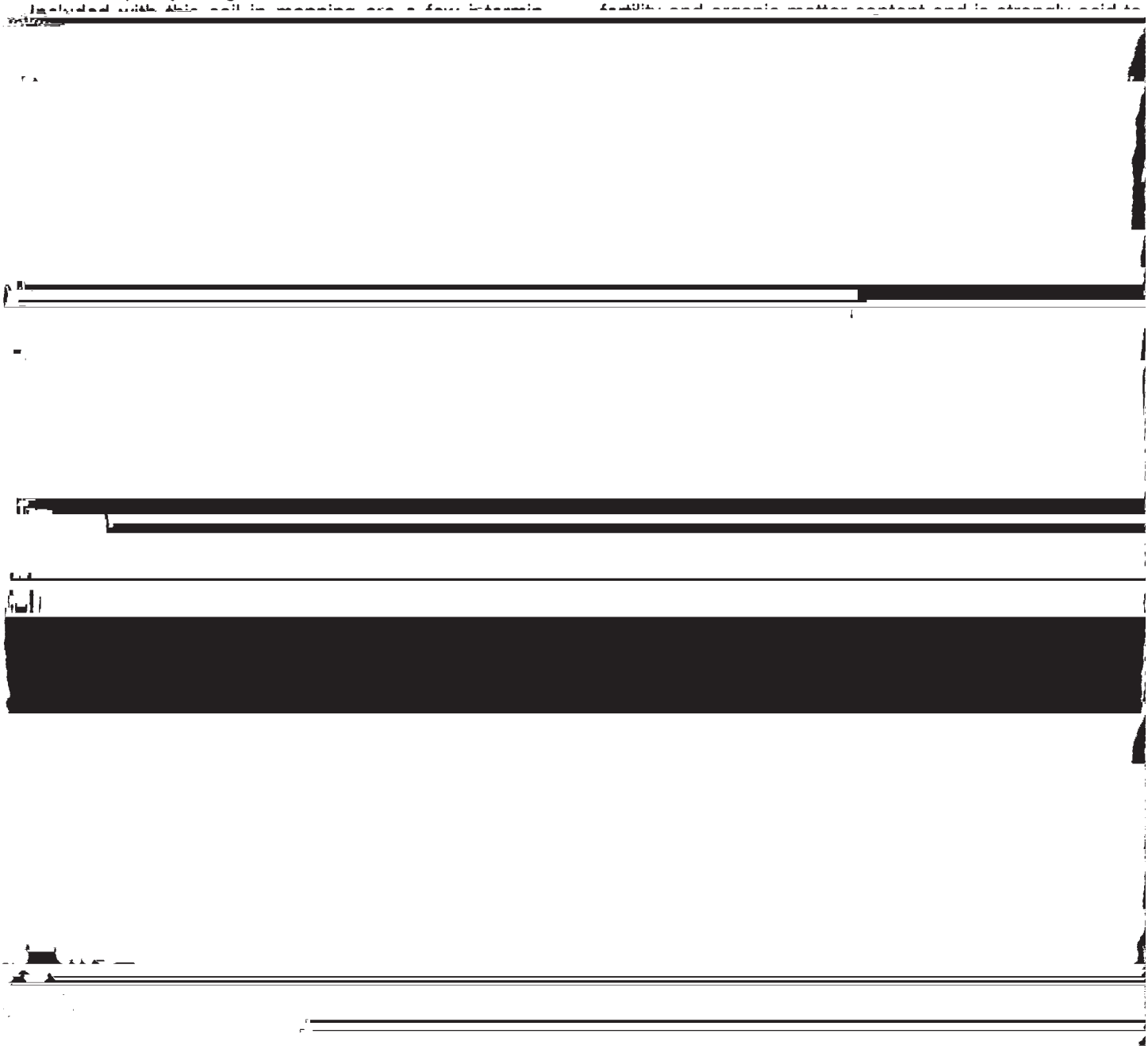
fine sandy loam about 5 inches thick. The subsoil is strong brown clay loam to a depth of about 27 inches, yellowish brown sandy clay loam to 37 inches, and coarsely mottled sandy clay loam with streaks of clean sand to 72 inches.

This soil is low in natural fertility and organic matter content. Unless limed, the surface layer is medium acid to slightly acid. Permeability is moderate, and the available water capacity is high.

Included with this soil in mapping are a few intermin-

Romia fine sandy loam makes up about 25 percent of each mapped area. Typically, the surface layer is dark brown and is about 6 inches thick. The subsurface layer is brown fine sandy loam about 8 inches thick. The subsoil to a depth of 32 inches is yellowish red clay loam. To a depth of about 44 inches it is yellowish red sandy clay loam. The underlying material to a depth of 58 inches is soft red sandstone.

This Romia soil is well drained. It is low in natural fertility and organic matter content and is strongly acid to



gled areas of Bosville and Larue soils. These soils make up about 15 percent of this map unit, but separate areas are generally less than 5 acres.

slightly acid. Permeability is moderate, and the available water capacity is medium. Depth to the sandstone ranges from 40 to 60 inches.

inches thick. The subsoil extends to a depth of about 64 inches or more. To a depth of about 48 inches it is strong brown clay loam and sandy clay loam. Below this it is mottled reddish yellow sandy clay loam.

limitation for dwellings on Bernow soils is the moderate shrink-swell potential in the upper part of the subsoil. The moderate shrink-swell potential and the slope are limitations for small commercial buildings, and the low

This Bernow soil is low in natural fertility and low in organic matter content. The surface layer is medium acid

strength and the shrink-swell potential are limitations for roads and streets. Most of these limitations can be over

sandstone that extends to about 58 inches or more. Depth to the soft sandstone ranges from 40 to 60 inches.

Romia soils are well drained. They are low in natural fertility and organic matter content. The surface layer is strongly acid to slightly acid. Permeability is moderate, and the available water capacity is medium.

A few small areas of Larue soils are included in mapping. The acreage is not significant.

soils make up about 20 percent of the map unit, but separate areas are generally less than 3 acres.

The potential is low for crops because of flooding and a high water table. It is high for tame pasture. A mixture of bermudagrass or tall fescue and clover is most commonly used for tame pasture. Fertilizer not only improves the quality of the grass for forage but also increases the vigor of the stand, which protects the soil from erosion. The main management concerns are controlling brush,

Some fields have reverted naturally to native grasses or trees.

The potential is medium for native grass and tame pasture. The main concerns of management are controlling erosion and maintaining soil structure and fertility. Areas that have been cultivated should be seeded to tame pasture plants, native grasses, or trees to reduce erosion. Adding fertilizer, reducing excessive runoff, controlling grazing, and shaping gully banks insure the suc-

The potential is high for woodland. Flooding is the main limitation in using equipment.

The potential is low for all urban uses. Flooding and wetness are the main limitations.

The capability subclass is Vw. The woodland group is 2w. This soil is not assigned to a range site.

8—Bosville fine sandy loam, 1 to 4 percent slopes. This deep, moderately well drained, very gently sloping

The potential is medium for woodland. The main management problems are seedling mortality and the equipment limitation.

The potential is low for most urban uses. Wetness is the main limitation for septic tank absorption fields, sewage lagoons, and sanitary landfills. Low strength and

Most of these limitations can be overcome by proper design or by altering the soil.

The capability subclass is IVe. The woodland group is 4c. The range site is Sandy Savannah.

10—Bosville fine sandy loam, 3 to 8 percent

The potential is low for most urban uses. Wetness is the main limitation for septic tank absorption fields, sewage lagoons, and sanitary landfills. Low strength and a high shrink-swell potential are the main limitations for dwellings, small commercial buildings, roads, and streets. Most of these limitations can be overcome by proper design or by altering the soil.

The capability subclass is IVe. The woodland group is 4c. The range site is Sandy Savannah.

11—Bosville fine sandy loam, 8 to 15 percent slopes. This deep, moderately well drained, strongly sloping to moderately steep soil is on uplands. Slopes are smooth and convex. Most areas are 35 to 200 acres; some are only 15 acres.

Typically, the surface layer is 6 inches of dark grayish brown fine sandy loam. The subsoil is red clay to a depth of about 30 inches and coarsely mottled red, yellowish brown, and gray clay to about 68 inches or more.

This soil is low in natural fertility and organic matter content. Permeability is very slow, and the available water capacity is medium. A high water table is at a depth of 1 to 2 feet in winter and spring.

About 20 percent of this map unit is included areas of Bernow and Romia soils and a few small areas of eroded soils of approximately 1 acre or less. Also includ-

Slopes are smooth and slightly convex. Most areas are more than 100 acres; some are only 15 acres.

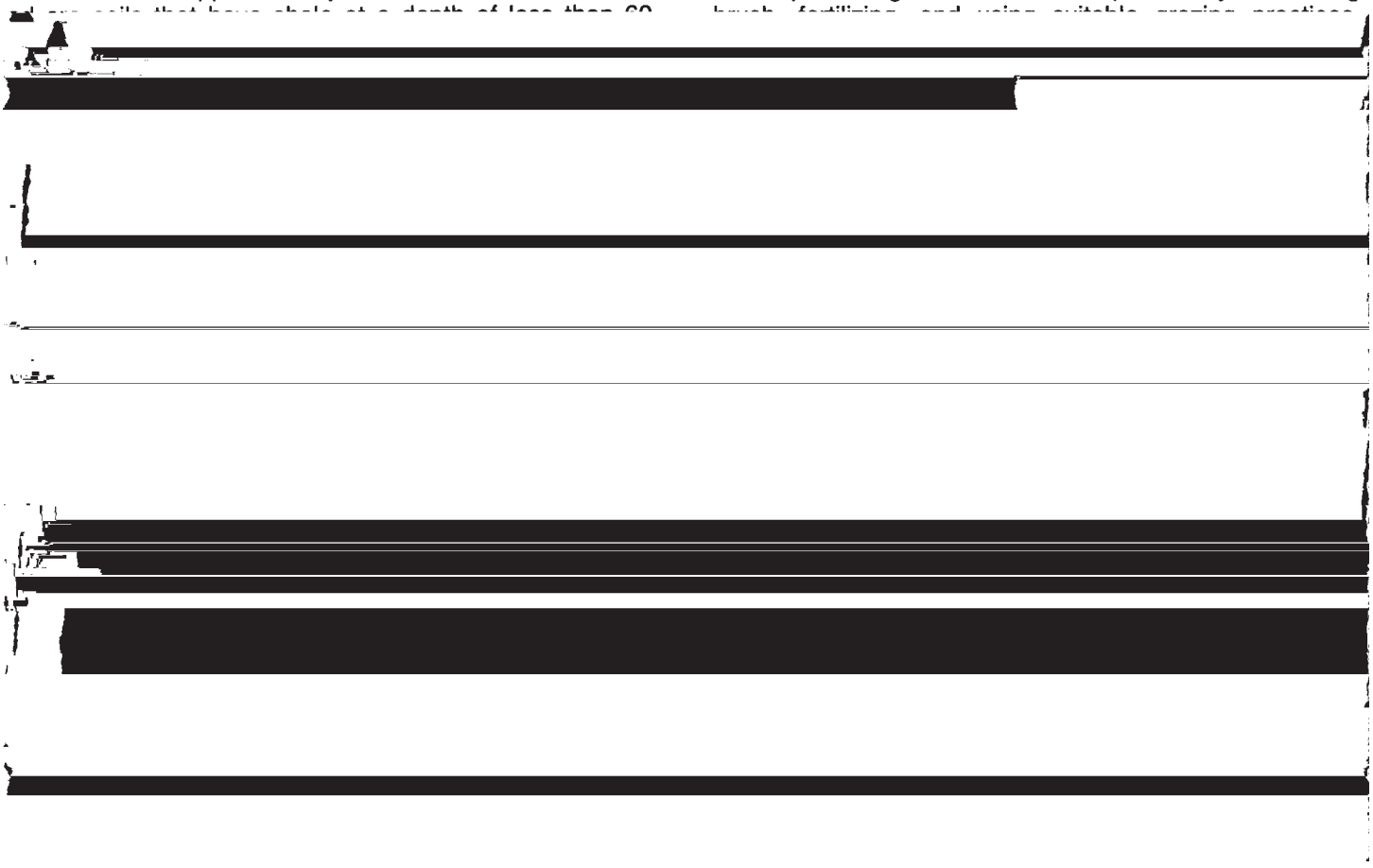
Typically, the surface layer is black clay about 44 inches thick. The next layer is olive clay that extends to a depth of about 64 inches or more.

This soil is high in natural fertility and organic matter content. It shrinks and forms wide cracks when dry and expands greatly when wet. The surface layer is medium acid to moderately alkaline. Permeability is very slow, and the available water capacity is high. This soil is difficult to till because the surface layer is so clayey.

Included with this soil in mapping are intermingled areas of Heiden, Ferris, and Durant soils. These included soils make up about 15 percent of any one mapped area. Separate areas of these included soils are generally less than 3 acres.

The potential is high for row crops and small grain. The erosion hazard is moderate in areas used for clean tilled crops. For continuous high yields, fertilizer and large amounts of plant residue are needed to improve soil structure, reduce surface crusting, increase the water intake rate, and control erosion. Terraces, contour farming, and cover crops help to control erosion.

The potential is high for native grass and tame pasture. Droughtiness limits pasture production in summer. Tame pasture grasses can be improved by controlling



percent of the mapped areas. These included soils occur in areas of generally less than 3 acres.

The potential is high for row crops and small grain. Management is needed to maintain or improve soil structure and fertility. Crop residue should be returned to the soil. Excessive tillage should be avoided.

The potential is low for native grass and high for tame pasture. A mixture of bermudagrass or tall fescue and clover is most commonly used for tame pasture. Controlling brush, deferring grazing, fertilizing, and preventing fires improve the quality and quantity of grasses.

The potential is high for woodland. There are no significant limitations. Stands can be improved by protecting them from fire, planting suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is medium for most urban uses. There are no significant limitations for area sanitary landfill. The main limitations are the moderate permeability for septic tank absorption fields, seepage for sewage lagoons, and the content of clay in the soil for trench sanitary landfills. Low strength and a moderate shrink-swell potential are the main limitations for dwellings, small commercial buildings, roads, and streets. Most of these limitations can be overcome by proper design or by altering the soil.

The capability class is I. The woodland group is 2o. This soil is not assigned to a range site.

14—Clebit-Tuskahoma association, strongly sloping. This map unit consists of well drained and moderately well drained soils in a regular and repeating pattern. Slopes are dominantly 8 to 12 percent but range to 20 percent in some areas. The landscape is mainly one of long and narrow ridges about 1/4 mile wide and 1 to 3 miles long.

Clebit soils are on the crests of ridges and on side slopes in a long, narrow repeating pattern across the slope. They are shallow soils that formed in material weathered from hard sandstone. Tuskahoma soils are on side slopes between areas of Clebit soils. They are also

cally, the surface layer is dark brown loam about 4 inches thick. The subsoil is yellowish red clay to a depth of about 12 inches and mottled yellowish red and gray shaly silty clay from 12 to 18 inches. The underlying material to a depth of about 30 inches is gray shale that has a few fine layers of shaly clay tilted 30 degrees from the horizontal.

Tuskahoma soils are low in natural fertility and organic matter content. The surface layer is neutral to strongly acid. Permeability is very slow, and the available water capacity is low. The perched water table is at a depth of 1/2 foot to 1 1/2 feet in fall through spring.

Included with this unit in mapping are a few small areas of soils that have sandstone at a depth of 20 to 28 inches but are otherwise similar to Clebit soils. Also included are a few small areas of Smithdale soils of generally less than an acre.

The potential is low for native grass and for tame pasture. The quality and quantity of native grass can be improved by controlling brush, proper grazing, and preventing fires.

The potential is also low for woodland. The main management concerns are the erosion hazard, equipment limitation, and seedling mortality.

The potential is low for most urban uses. The shallowness over rock in Clebit soils and the wetness in Tuskahoma soils are the main limitations for septic tank absorption fields, sewage lagoons, and sanitary landfills. The high shrink-swell potential and low strength of Tuskahoma soils, the shallowness over rock and the content of large stones in Clebit soils, and the slope are the main limitations for dwellings, small commercial buildings, roads, and streets. Some of these limitations can be overcome by proper design or by altering the soil.

The capability subclass is VIIs. The woodland group is 5x for Clebit soil and 5d for Tuskahoma soil. The range site is Shallow Savannah.

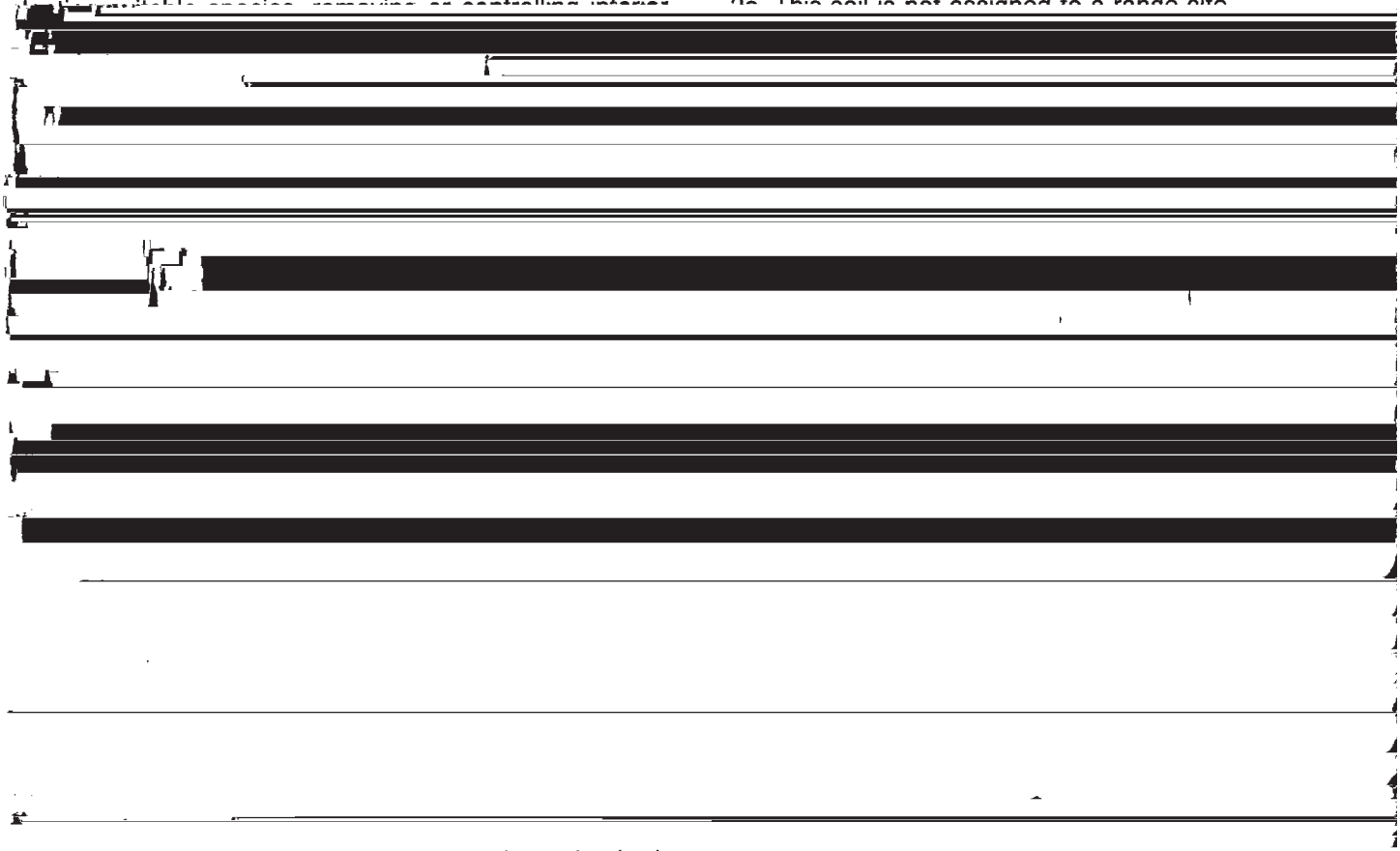
15—Coushatta silty clay loam. This deep, nearly

10 percent of mapped areas. Individual areas are generally less than 3 acres.

The potential is high for row crops and small grain. Management is needed to maintain soil structure and fertility. All crop residue should be returned to the soil. Fertilizer should be applied for maximum production.

The potential is medium for native grass and high for tame pasture. A mixture of bermudagrass or tall fescue and clover is most commonly used for tame pasture. Fertilizing tame pasture plants not only improves the quality of grass but also increases production, which protects the soil from erosion. The quality of all grasses can be improved by controlling grazing, proper stocking, and preventing fires.

The potential is high for woodland. There are no significant limitations in woodland use or management. Stands can be improved by protecting them from fire,



species, and selectively harvesting on a planned schedule.

The potential is low for most urban uses. The rare flooding is the main limitation for area sanitary landfills. The main limitations for septic tank absorption fields are rare flooding and moderate permeability. Seepage is a limitation for sewage lagoons. The content of clay in the soil is a limitation for trench sanitary landfills. Rare flooding is the main limitation for dwellings and small com-

The potential is high for row crops and small grain. Good tilth can be maintained by returning crop residue to the soil. Minimum tillage and cover crops help to maintain soil structure and to prevent surface crusting.

This soil has high potential for native grass and tame pasture. A mixture of bermudagrass or bahiagrass and clover is most commonly used for tame pasture. Fertilizer increases forage production and improves the vigor of the grass. The quality of all grasses can be improved by controlling grazing, preventing fires, controlling brush, and proper stocking.

This soil has high potential for woodland. It has no significant limitations.

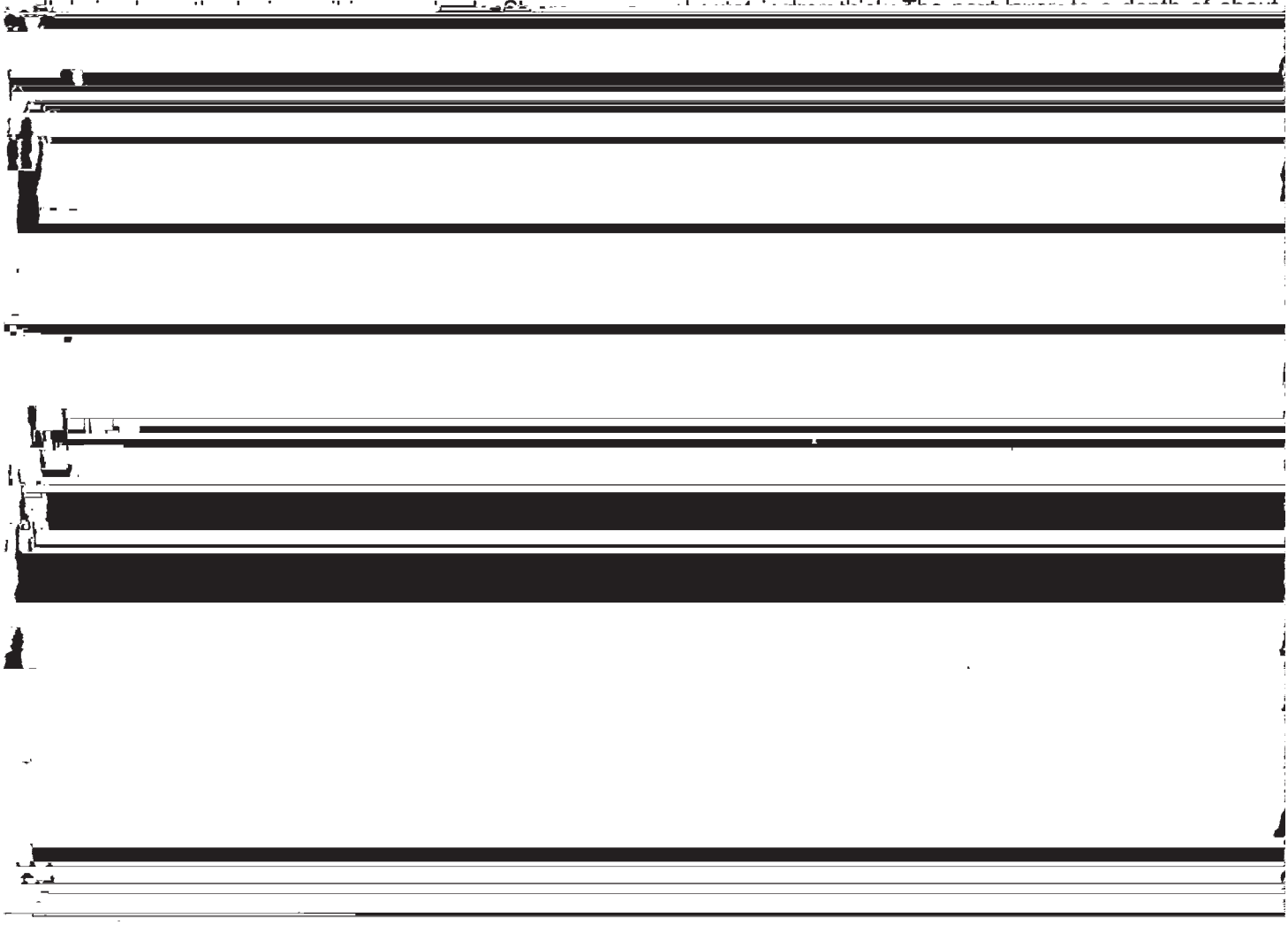
The potential is low for urban use. Flooding is the main limitation. This limitation can be reduced only by major flood control measures.

The capability subclass is IIw. The woodland group is

17—Durant silt loam, 1 to 3 percent slopes. This deep, moderately well drained, very gently sloping soil is on prairie uplands mostly in the western part of the county. Slopes are smooth and convex. Most areas are more than 100 acres; some are only 15 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is dark brown silty clay loam to a depth of about 11 inches, olive brown

18—Ferris clay, 3 to 5 percent slopes. This deep, [redacted] Typically, the surface layer is dark grayish brown clay



smooth and slightly convex. Most areas are 20 to 100 acres; some are only 5 acres.

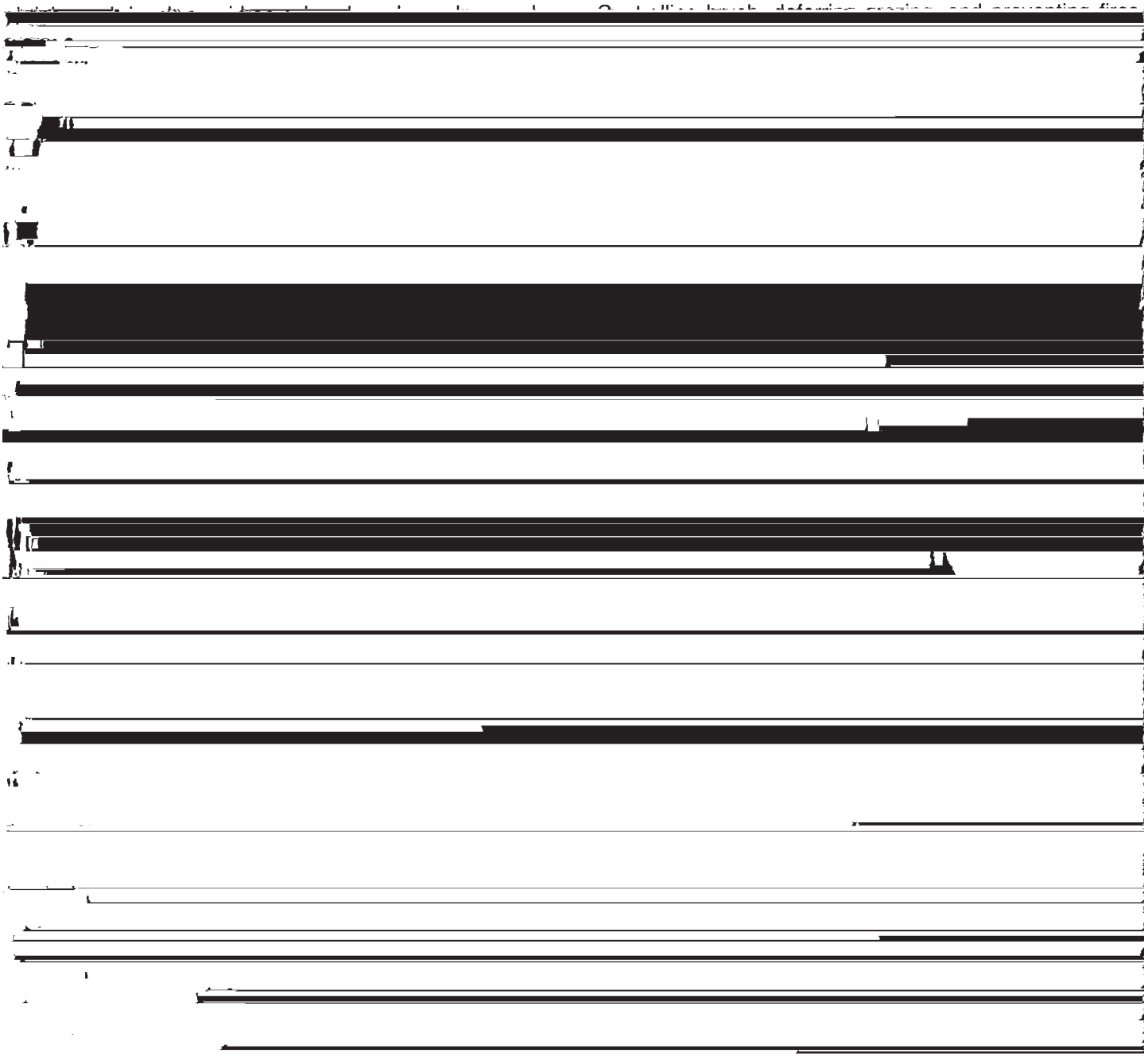
Typically, the surface layer is very dark grayish brown clay about 8 inches thick. The next layer, to a depth of about 48 inches, is olive brown and light olive brown clay. The underlying material is light olive brown shaly clay that extends to a depth of 62 inches or more.

This soil is medium in natural fertility and low in organic matter content. The surface layer is moderately alkaline. Permeability is very slow, and the available water capacity is high. This clayey soil has poor tilth and can be worked within only a narrow range of moisture con- [redacted]

52 inches, is olive and pale olive clay. The underlying material is olive shaly clay to a depth of 64 inches or more.

This soil is medium in natural fertility and low in organic matter content. The surface layer is moderately alkaline. Permeability is very slow, and the available water capacity is high. This clay soil has poor tilth, and it can be worked within only a narrow range of moisture content. It shrinks and develops wide cracks when dry and expands greatly when wet.

Included with this soil in mapping are a few small areas of the eroded Heiden and Burleson soils. These [redacted]



greatly when wet.

About 10 percent of this map unit is included areas of Heiden soils, and about 6 percent is areas of Swink soils. These included areas are generally less than 3 acres.

The potential is low for row crops and small grain. The main limitation is the strong slope.

The potential is high for native grass and medium for tame pasture. A mixture of bermudagrass or bahiagrass and clover is most commonly used for tame pasture. Controlling brush, proper grazing, and preventing fires improve the quality and quantity of all grasses.

will improve the quality and quantity of all grasses. Fertilizing tame pasture grasses increases forage production.

The potential is high for woodland. There are no significant limitations for woodland use or management. Trees can be improved by protecting them from fire, planting suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is low for most urban uses. The main limitations are the slow permeability and wetness for septic tank absorption fields, wetness and flooding for sewage lagoons, the content of clay in the soil and

ing, controlling brush, preventing fires, and controlling grazing.

The potential is medium for woodland. The main concerns of management are the equipment limitation and seedling mortality.

The potential is low for most urban uses. Flooding and wetness are the main limitations.

The capability subclass is IVw. The woodland group is 2w. This soil is not assigned to a range site.

23—Heiden clay, 2 to 5 percent slopes. This deep, well drained, gently sloping soil is on uplands mostly in the southwestern part of the county. Slopes are smooth and slightly convex. Most areas are 10 to 40 acres.

Typically, the surface layer is a dark olive gray clay about 18 inches thick. The next layer from 18 to about 40 inches is olive clay. The underlying material is coarse-

24—Hollywood silty clay, 1 to 3 percent slopes. This deep, moderately well drained, very gently sloping soil is on uplands. It is on broad, smooth ridges. Most areas are 40 to 300 acres; some are only 15 acres.

Typically, the surface layer is black silty clay to a depth of 19 inches and very dark gray silty clay to 30 inches. The underlying material is olive brown silty clay that extends to about 72 inches or more.

This soil is high in natural fertility and organic matter content. The surface layer is slightly acid to moderately alkaline. Permeability is very slow, and the available water capacity is high. The soil has poor tilth and can be worked within only a narrow range of moisture content.

Included with this soil in mapping are small areas of Panola and Swink soils. Areas of these soils make up about 10 percent of the mapped areas. They are generally less than 1 acre.

water capacity is high. The soil has poor tilth and can be worked within only a narrow range of moisture content.

About 8 percent of this map unit is small areas of

grayish brown stony clay about 14 inches thick. Below this is fractured hard limestone.

This Swink soil is high in natural fertility and medium in

with a profile similar to the Hollywood soil, but the surface layer is thinner and lighter in color. Areas of these included soils are generally less than 3 acres.

The potential is medium for row crops and small grain. Management is needed to reduce the erosion hazard, to prevent surface crusting, and to improve soil structure

line, very slowly permeable, and low in available water capacity.

About 4 percent of this map unit is included areas of Panola soils. About 4 percent is soils that are similar to Lula soils but have more than 35 percent fragments of chert throughout the profile. These included soils are

have silty clay below 24 inches. These included areas are generally less than 3 acres.

The potential is high for row crops and small grain. The main concerns of management are surface wetness, ponding, flooding, soil structure, and water intake. The cropping system should provide for the return of adequate amounts of crop residue. Wet and ponded areas can be established to water tolerant grasses. Simple drainage systems where necessary and practical help in establishing and producing better crops.

The potential is high for native grass and tame pasture. A mixture of bermudagrass or tall fescue and clover is most commonly used for tame pasture. Fertilizing tame pasture plants not only improves the quality of grass but also increases production, which helps to protect the soil from erosion. The quality of all grasses can be improved by controlling grazing, proper stocking, and preventing fires.

The potential is high for woodland. There are no significant limitations. Stands can be improved by preventing fires, planting suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is low for most urban uses. Flooding is the chief limitation for septic tank filter fields, dwellings,

suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is high for most urban uses. There are no significant limitations for septic tank filter fields, area sanitary landfills, dwellings, and small commercial buildings. The main limitations are seepage for sewage lagoons and low strength for roads and streets. These

cial buildings, roads, and streets. The flood hazard can be reduced, but not completely eliminated, by upstream flood control structures. The potential hazard is high for houses built on the flood plain.

The capability subclass is IIIw. The woodland group is 2w. This soil is not assigned to a range site.

31—Kaufman clay, depressional. This deep, some-

32—Kiomatia loamy fine sand. This deep, well drained, nearly level soil is on flood plains along the Red River. Slopes are 0 to 1 percent and are smooth but slightly convex and concave. Individual areas are 15 to 150 acres.

Typically, the surface layer is reddish brown loamy fine sand about 6 inches thick. The underlying material, to a depth of 18 inches, is yellowish red loamy fine sand. Below 18 inches is light reddish brown fine sand that extends to a depth of 62 inches or more.

Typically, the surface layer is brown loamy fine sand about 10 inches thick. The subsurface layer is light yellowish brown loamy fine sand about 18 inches thick. The subsoil is yellowish red sandy clay loam to a depth of about 42 inches and is mottled yellowish red sandy clay loam to 80 inches or more.

This soil is low in natural fertility and organic matter content. The surface layer is medium acid or slightly acid. Permeability is moderate, and the available water capacity is medium. The soil has good tilth and can be

is occasionally flooded. The water table is at a depth of 1 to 3 feet in winter and spring.

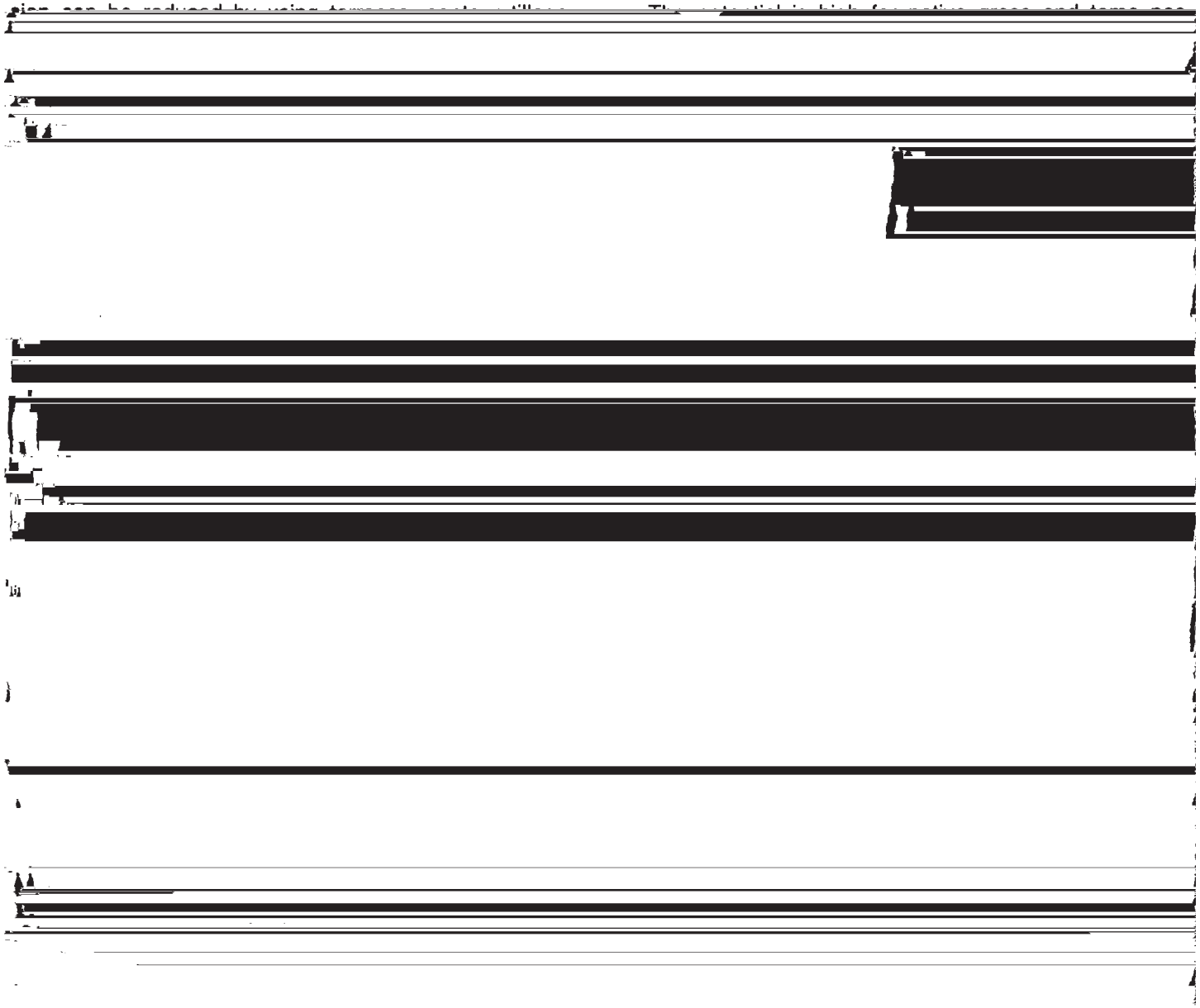
Included with this soil in mapping are small areas of Coushatta and Redlake soils and a few small areas of soils that are similar to the Latanier soil, but the surface layer is less than 10 inches thick. Areas of these included soils are generally less than 5 acres.

The potential is low for row crops and small grain. Management is needed to control wetness and to maintain soil structure. The soil is difficult to till because of the clayey surface layer. Tillage should be timely and kept to a minimum. Soil fertility and structure can be

About 3 percent of this map unit is included areas of Newtonia soils. About 10 percent is soils that are similar to Lula soils, but the surface layer is lighter in color and the lower part of the subsoil is 25 to 35 percent fragments of limestone. Areas of these included soils are generally less than 3 acres.

This soil has medium potential for row crops and small grains. It responds well to good management. Erosion is a moderate hazard if row crops are grown. Minimum tillage, fertilizer, crop residue, and cover crops in the cropping system help to maintain fertility and control erosion.

The potential is high for native grass and tame pas-



and crop residue. Plant cover is needed in winter and spring to protect the soil from water erosion. Sown crops can be grown continuously if fertilizer is added and crop residue is well managed. Terracing and contour farming are needed if row crops are grown. Crop residue should be returned to the soil, and excessive tillage avoided.

The potential is medium for native grass and high for tame pasture. A mixture of bermudagrass or tall fescue and clover is most commonly used for tame pasture. Fertilizing tame pasture plants not only improves the quality of grass but also increases production, which helps to protect the soil from erosion. The quality of all grasses can be improved by controlling grazing, proper stocking, and preventing fires.

The potential is medium for woodland. There are no

ture. A mixture of bermudagrass and clover is most commonly used for tame pasture. Fertilizing tame pasture plants not only improves the quality of grass but also increases production, which helps to protect the soil from erosion. The quality of all grasses can be improved by controlling grazing, proper stocking, and preventing fires.

The potential is low for woodland. Trees do not generally grow on this soil, but brush and trees encroach in some areas.

The potential is medium for most urban uses. There are no significant limitations for area sanitary landfills. The main limitations are the moderate permeability for septic tank absorption fields, the seepage and slope for sewage lagoons, and the content of clay for trench sanitary landfills. Low strength and a high shrink-swell poten-

The potential is high for woodland. There are no significant limitations for woodland use or management. Stands can be improved by preventing fires, planting suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is low for most urban uses. Rare flooding is a significant limitation for dwellings and small commercial buildings. Other limitations are wetness for dwellings with basements or septic tank absorption fields, seepage for sewage lagoons or sanitary landfills, and low strength for roads and streets. Except for flooding, most of these limitations can be overcome by proper design or by altering the soil.

The capability class is I. The woodland group is 2o. This soil is not assigned to a range site.

39—Panola silt loam, 0 to 2 percent slopes. This deep, somewhat poorly drained, nearly level soil is on uplands. Slopes are broad, smooth, and slightly convex.

The potential is low for most urban uses. Wetness is the main limitation for septic tank absorption fields, sewage lagoons, and sanitary landfills. Wetness, low strength, and a high shrink-swell potential are the main limitations for dwellings, small commercial buildings, roads, and streets. Most of these limitations can be overcome by proper design or by altering the soil.

The capability subclass is IIIe. The range site is Loamy Prairie. This soil is not assigned to a woodland group.

40—Pledger clay. This deep, somewhat poorly drained, nearly level soil is on flood plains along the Red River and at the mouth of other major streams in the county. Slopes are 0 to 1 percent and smooth. Most areas are 20 to 200 acres.

Typically, the surface layer is very dark brown and black clay about 30 inches thick. The subsoil to a depth of about 56 inches is dark brown and reddish brown clay. The underlying material to about 72 inches is red-

sewage lagoons, and sanitary landfills. A high shrink-swell potential and flooding are the main limitations for dwellings, small commercial buildings, roads, and streets. Except for flooding, most of these limitations can be overcome by proper design or by altering the soil.

The capability subclass is IIs. The woodland group is 3c. This soil is not assigned to a range site.

41—Redlake clay. This deep, moderately well drained, nearly level soil is on flood plains along the Red [illegible]

tures. The hazard is high for houses built on the flood plain.

The capability subclass is IIIw. The woodland group is 3w. This soil is not assigned to a range site.

42—Roebuck clay. This deep, somewhat poorly drained to poorly drained, nearly level soil is on flood plains. Slopes are 0 to 1 percent. The surface is concave. Most areas are 15 to 100 acres.

Typically, the surface layer is about 5 inches of very

43—Ruston fine sandy loam, 1 to 3 percent slopes. This deep, well drained, very gently sloping soil is on uplands. It is on smooth broad ridges. Areas are 15 to 300 acres.

Typically, the surface layer is dark brown fine sandy loam to about 6 inches thick. The subsurface layer is light yellowish brown fine sandy loam about 10 inches thick. The subsoil is red clay loam to a depth of about 32 inches, yellowish red sandy clay loam to about 58 inches, and yellowish red sandy clay loam that extends to 80 inches or more (fig. 3).

This soil is low in natural fertility and organic matter content. The surface layer is strongly acid to slightly acid but ranges to neutral in limed areas. Permeability is moderate, and the available water capacity is medium. The

yellowish brown fine sandy loam about 10 inches thick. The subsoil extends to a depth of 66 inches or more. It is yellowish red sandy clay loam.

This soil is low in natural fertility and organic matter content. Reaction is strongly acid to slightly acid in the surface layer but ranges to neutral in limed areas. Permeability is moderate, and the available water capacity is medium. This soil has fair tilth and can be worked throughout a wide range of moisture content.

Included with this Ruston soil in mapping are small areas of Kirvin, Smithdale, and Tenaha soils. These included soils make up about 15 percent of the map unit. Separate areas are generally less than 5 acres.

The potential is medium for row crops and small grain. The main concerns of management are an erosion

about 7 inches thick. The subsoil is yellowish red very

included soils make up about 20 percent of the map unit.

[redacted]

helps to protect the soil from erosion. The quality of all grasses can be improved by controlling grazing, proper stocking, and preventing fires.

The potential is high for woodland. There are no significant limitations for woodland use or management. Stands can be improved by protecting them from fire, planting suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is low for most urban uses. Flooding is the main limitation for septic tank absorption fields, sewage lagoons, sanitary landfills, dwellings, small commercial buildings, roads, and streets. The flood hazard can be reduced, but not completely eliminated, by upstream flood control structures. The hazard is high for houses built on the flood plain.

The capability class is I. The woodland group is 2o. This soil is not assigned to a range site.

50—Swink-Hollywood complex, 5 to 20 percent slopes. This map unit consists of the shallow Swink and deep Hollywood soils in such an intricately mixed pattern that mapping them separately is not practical at the scale selected for mapping. The Swink soil occurs on crests, microcrests, and microescarpments on side slopes near the outcrops of limestone. The Hollywood soil occurs on upper, middle, and lower slopes of less than 8 percent between areas of the Swink soil and the limestone outcrop. Most areas are 1/2 acre to 5 acres in size.

The Swink soil makes up 50 to 70 percent of each mapped area. Typically, the upper 5 inches of the surface layer is black stony clay, and the lower 9 inches is very dark grayish brown stony clay. Fractured limestone and thin strata of calcareous shale are at a depth of 14 inches.

This soil is high in natural fertility and medium in organic matter content. The surface layer is neutral to

The potential is high for native grass (fig. 5) and low for tame pasture. The quality and quantity of all grasses can be improved by controlling weeds and brush, proper grazing, and preventing fires.

The potential is low for woodland. Trees do not generally grow on these soils.

The potential is low for most urban uses. There are no significant limitations for area sanitary landfills. The shallowness of the Swink soil over rock is the main limitation for trench sanitary landfills, septic tank absorption fields, and sewage lagoons. Low strength and a high shrink-swell potential are the main limitations for dwellings, small commercial buildings, roads, and streets. Most of these limitations can be overcome by proper design or by altering the soil.

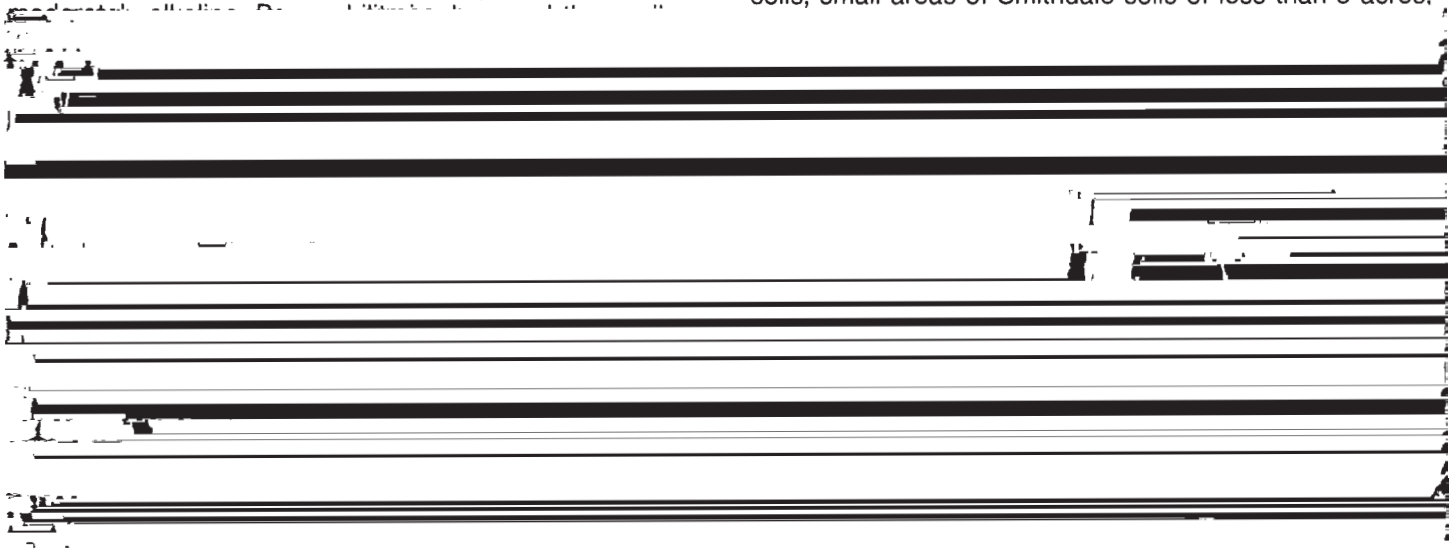
The capability subclass is VIIs. The range site is Shallow Prairie for Swink soil and Blackclay Prairie for Hollywood soil. This soil is not assigned to a woodland group.

51—Tenaha loamy fine sand, 1 to 5 percent slopes. This deep, well drained, very gently sloping to gently sloping soil is on ridges and side slopes of uplands. Slopes are smooth and convex. Individual areas are 15 to 150 acres.

Typically, the surface layer is brown loamy fine sand about 6 inches thick. The subsurface layer is yellowish brown and brownish yellow loamy fine sand about 22 inches thick. The subsoil is yellowish red sandy clay loam and loam that extends to a depth of 56 inches. Below this is yellowish red soft sandstone. The depth to sandstone ranges from 40 to 60 inches.

This soil is low in natural fertility and organic matter content. The surface layer is strongly acid or medium acid but ranges to neutral in limed areas. Permeability is moderate, and the available water capacity is medium. This soil has fair tilth and can be worked throughout a wide range of moisture content.

Included with this soil in mapping are areas of Kirvin soils; small areas of Smithdale soils of less than 3 acres;



grasses can be improved by controlling grazing, proper stocking, and preventing fires.

The potential is medium for woodland. There are no erosion hazards or significant limitations for woodland use or management of equipment. Stands can be improved by protecting them from fire, planting suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is high for most urban uses. There are

grasses can be improved by controlling grazing, proper stocking, and preventing fires.

The potential is medium for woodland. There are no erosion hazards or significant limitations for woodland use or management of equipment. Stands can be improved by protecting them from fire, planting suitable species, removing or controlling inferior species, and selectively harvesting on a planned schedule.

The potential is high for most urban uses. There are

strongly acid. Permeability is moderately slow, and the available water capacity is high.

About 30 percent of this map unit is included areas of soils, generally less than 5 acres in size. These included soils have a sandy surface layer less than 20 inches thick or more than 40 inches thick. Otherwise their profile is similar to that of Tenaha soils.

The potential is low for row crops and small grain. The main limitations are the slope and the hazard of erosion. The potential is medium for native grass and tame

tends to a depth of about 65 inches or more. The depth to sandstone ranges from 40 to 60 inches.

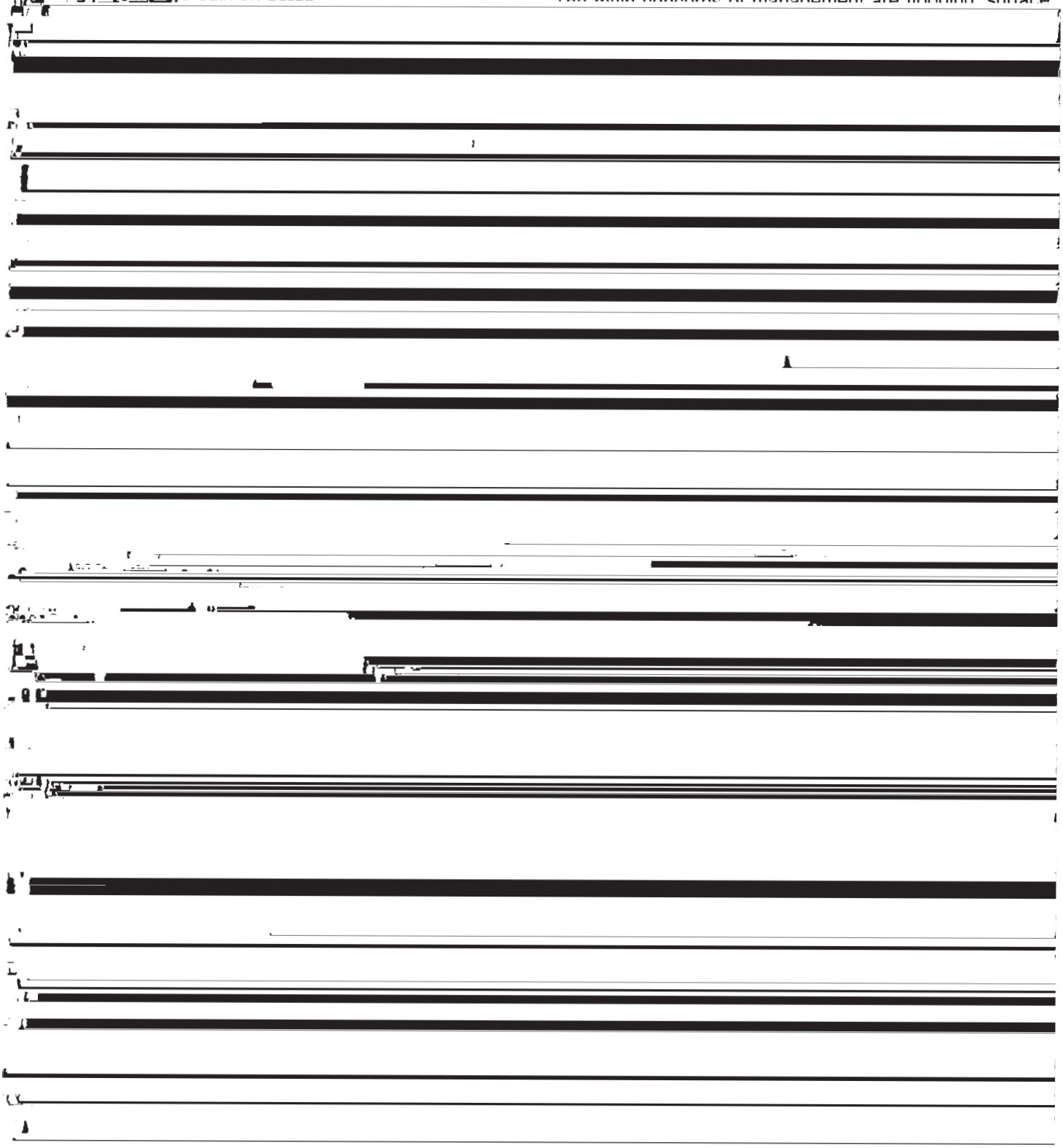
The Tenaha soil is low in natural fertility and organic matter content. The surface layer is strongly acid or medium acid but ranges to neutral in limed areas. Permeability is moderate, and the available water capacity is medium.

About 30 percent of this map unit is the Smithdale soil. Typically, the surface layer is dark grayish brown fine

55—Trinity clay. This deep, somewhat poorly drained, nearly level soil is in smooth or slightly concave flood plains. Slopes are 0 to 1 percent. Most areas are 25 to [illegible] acres.

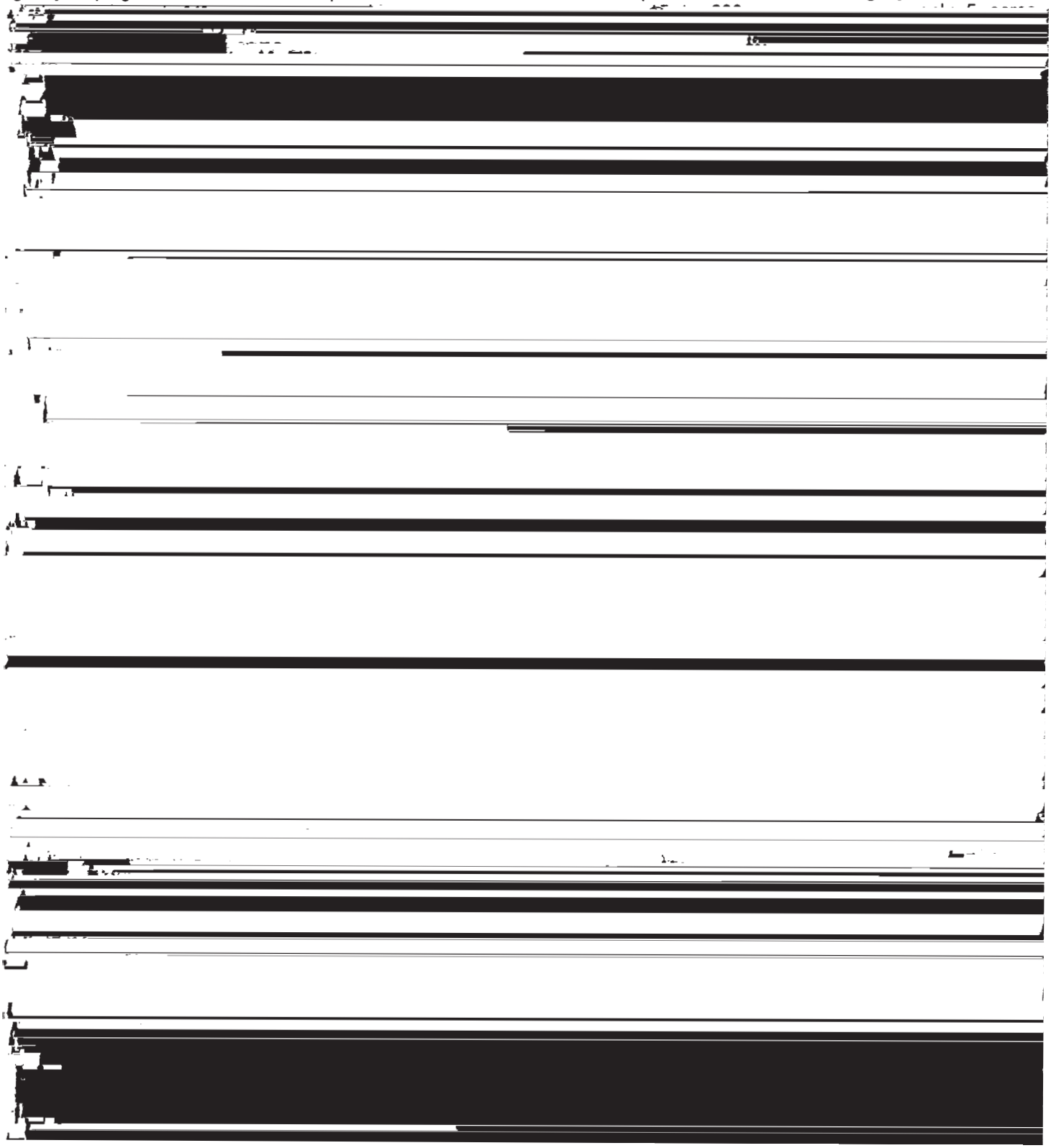
included soils make up less than 15 percent of the map unit.

The potential is medium for row crops and small grain. The main concerns of management are flooding, surface



58—Whakana very fine sandy loam, 1 to 4 percent slopes. This deep, well drained, very gently sloping to gently sloping soil is on terraces. Slopes are smooth and

59—Whakana very fine sandy loam, 4 to 8 percent slopes. This deep, well drained, sloping soil is on terraces. Slopes are smooth and slightly convex. Most



Wrightsville and Elysian soils on terraces. These soils are so intermingled that mapping them separately is not practical at the scale selected for mapping. The Wrightsville soil occurs in the nearly level areas. The Elysian soil occurs on the slightly higher undulating mounds. Slopes are predominantly 0 to 1 percent, but some are up to 3 percent. Individual areas are 5 to 100 acres.

The poorly drained Wrightsville soil makes up 60 percent of each area mapped. Typically, the surface layer is grayish brown silt loam 4 inches thick. The subsurface layer is light brownish gray mottled silt loam about 8 inches thick. The next layer, about 14 inches thick, is gray mottled silty clay that has vertical streaks of light gray silt loam. The subsoil to a depth of 70 inches or more is gray mottled silty clay.

This Wrightsville soil has medium natural fertility and low organic matter content. The surface layer is very strongly acid or strongly acid. Permeability is very slow, and the available water capacity is high. The soil has good tilth and can be worked throughout a medium range of moisture content.

The moderately well drained Elysian soil makes up 25 percent of each area mapped. Typically, the surface layer is dark grayish brown very fine sandy loam about 5 inches thick. The subsoil is brownish yellow fine sandy loam to a depth of about 34 inches and yellowish brown mottled loam that has vertical streaks of light gray fine sandy loam to about 72 inches.

The potential is low for most urban uses. There are no significant limitations for sewage lagoons on the Wrightsville soil. Wetness is the main limitation for septic tank absorption fields and sanitary landfills. Wetness, low strength, and the high shrink-swell potential of the Wrightsville soil are the main limitations for dwellings, small commercial buildings, roads, and streets. Some of these limitations can be overcome by proper design or by altering the soil.

The capability subclass is IIIw. The woodland group is 3w for Wrightsville soil and 2o for Elysian soil. This unit is not assigned to a range site.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank dispos-

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

Odes G. Hensen, conservation agronomist, Soil Conservation Service, helped prepare this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning." Planners of management systems for individual fields or farms should also consider the detailed information given in the de-

ed into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil. Bosville, Burleson, Durant, and Panola soils are examples.

Erosion also reduces productivity on soils that tend to be droughty, for example, Kiomatia loamy fine sand. Second, soil erosion on farmland results in sedimentation of streams. Controlling erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use and recreation and for fish and wildlife.

In many sloping fields, tilling or preparing a good seedbed is difficult on clayey spots because the original friable surface soil has been eroded away. Such spots are common in areas of the moderately eroded Bosville and Ferris soils.

Erosion control provides a protective surface cover, reduces runoff, and increases infiltration. A cropping system that keeps a plant cover on the soil for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms that need pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land, provide nitrogen, and improve tilth for the following crop.

A cropping system that provides substantial plant cover is needed to control erosion. Minimum tillage and crop residue on the surface increase infiltration and reduce the hazards of runoff and erosion. Both can be

poorly drained Alusa, Boggy, Guyton, Hopco, Kaufman, Latanier, Panola, Pledger, Roebuck, Trinity, Tuscumbia, and Wrightsville soils.

Soil fertility is naturally low in most soils on uplands in the survey area. The soils on flood plains or terraces are naturally higher in plant nutrients than most soils on uplands.

Unless limed, forest soils on uplands are acid. Sufficient ground limestone is needed to raise the pH level for good growth of alfalfa and other crops that grow only on nearly neutral soils. Available phosphorus and potash levels are naturally low in most of these soils. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to be applied.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils that have good tilth are granular and porous.

Many soils used for crops in the survey area have a surface layer of fine sandy loam or loamy fine sand that

as cropland. Each year additional land is being developed for urban uses in Hugo and other small towns in the survey area.

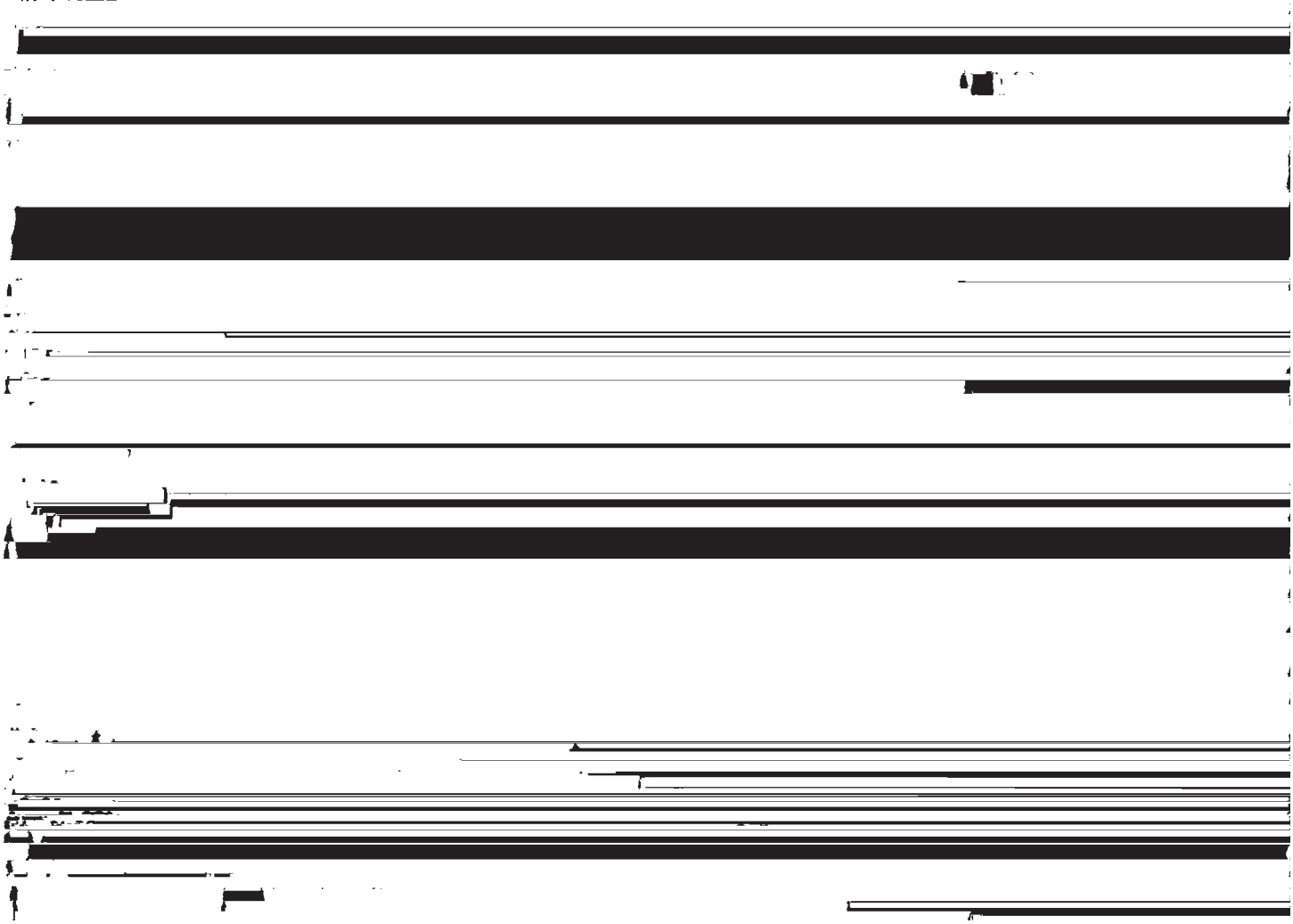
Tame pasture

Much of the acreage in the county is tame pasture. The trend is toward converting cropland and woodland and also some rangeland to pasture.

The principal grass is improved bermudagrass. Some of the better pastures of bermudagrass are overseeded with legumes. The additional plant food improves the quality and increases the quantity of forage.

Some bermudagrass pastures are overseeded with fescue. This grass mixture is especially well suited to soils on flood plains where additional moisture is available. It provides grazing in nearly all months and furnishes added protein for livestock when the bermudagrass is dormant.

Fescue, another commonly grown grass in the county, provides a sufficient quantity of forage for grazing on



keep a proper balance in the stand. Grazing must be compatible with the kind of growth pasture plants make.

Proper grazing and rotation grazing help to lengthen the life of most tame pasture plants. Deferred grazing is beneficial. It allows the plants to regain vigor by helping to maintain a large root system where food can be stored for the next growing season, and it therefore increases total production of forage.

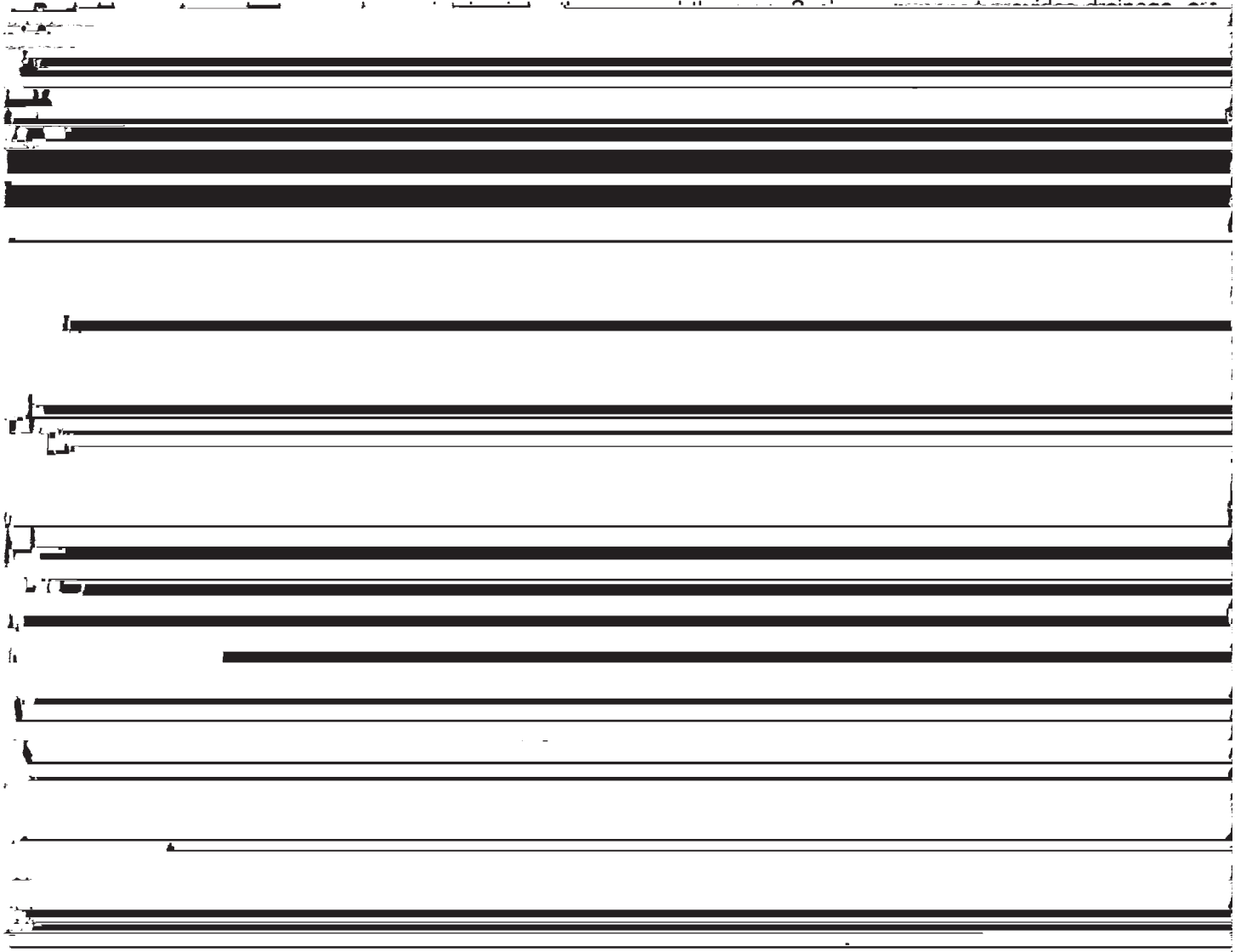
Plant nutrients are needed for vigorous pasture plants. They increase forage production and lengthen the lifespan of the plants. Nitrogen can be supplied by seeding a grass-legume mixture or by using a commercial fertilizer. The acidity of the soil should be adjusted to the kinds of plants desired in the stand. Unless legumes are grown with the grass, large amounts of plant nutrients, especially nitrogen, are needed.

sence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil or that a given crop is not commonly irrigated.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. See figure 6. A few farmers may be obtaining average yields higher than those shown in table 6.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil



stand only by controlling the invasion of undesirable plants. Weed control is needed. Brush control, mowing

sion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop

projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering purposes.

In the capability system, all kinds of soil are grouped at two levels: capability class and subclass. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

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

Class I soils have few limitations that restrict their use.

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

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

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

Class V soils are not likely to erode but have other

Rangeland

Ernest C. Snook, range conservationist, Soil Conservation Service, helped prepare this section.

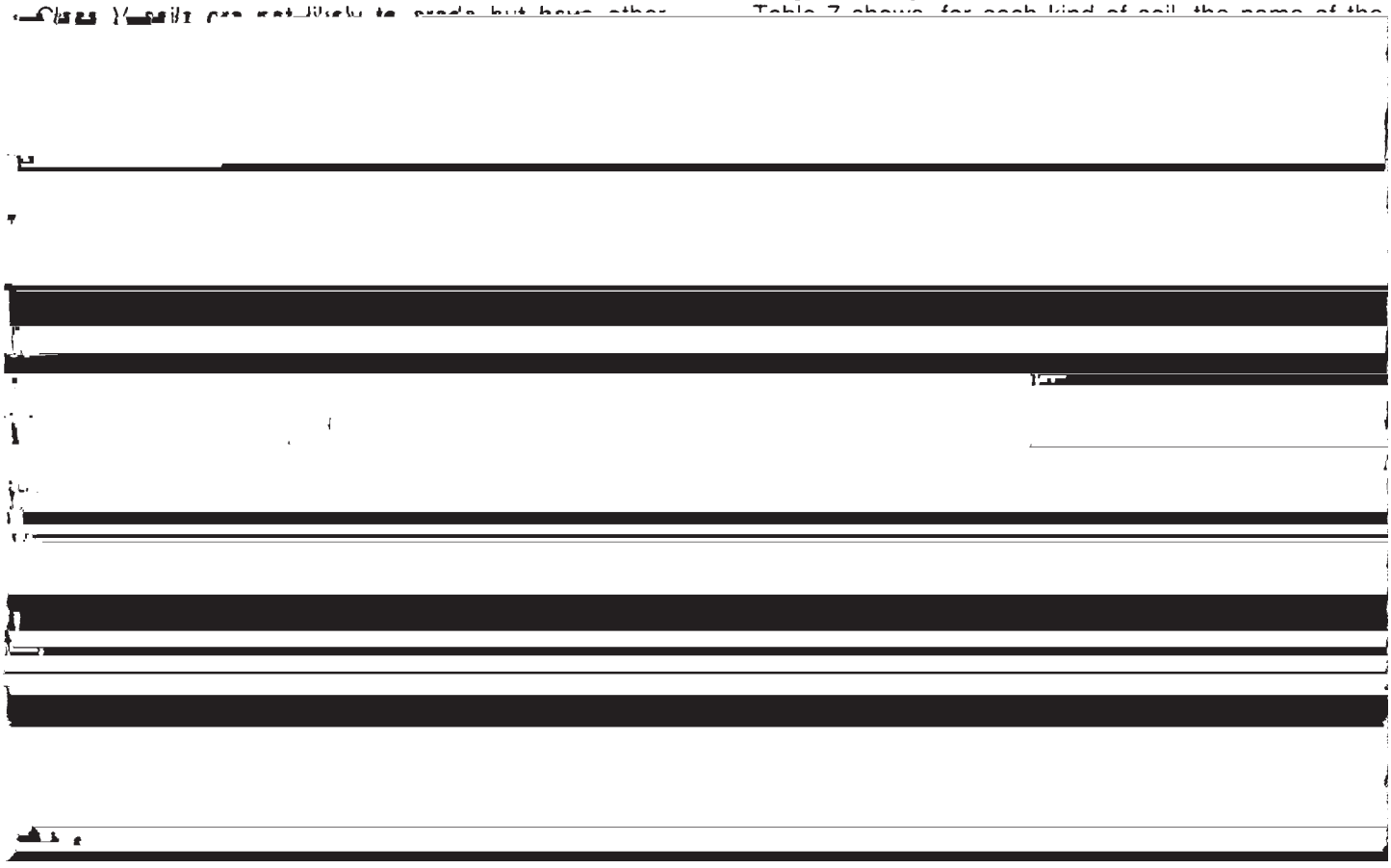
About 50 percent of Choctaw County is range. More than half of the farm income is derived from livestock, principally cattle. Cow-calf-steer operations are dominant.

On many ranches the forage produced on rangeland is supplemented by crop stubble and small grain. In winter the native forage is often supplemented with protein concentrate. Creep feeding of calves and yearlings to increase market weight is practiced on some ranches.

The native vegetation in many parts of the survey area has been greatly depleted by continued excessive use. Much of the acreage that was once open grassland is now covered with brush and weeds. The amount of forage produced may be less than half of that originally produced. Productivity of the range can be increased by using management practices that are effective for specific kinds of soil and range sites.

Where climate and topography are about the same, differences in the kind and amount of vegetation that rangeland can produce are related closely to the kind of soil. Effective management is based on the relationships among soils, vegetation, and water.

Table 7 shows, for each kind of soil, the name of the



normal year these conditions are about average for the area; in an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight refers to the total air-dry vegetation produced per acre each year by the potential natural plant community. Vegetation that is highly palatable to livestock and vegetation that is unpalatable are included. Some of the vegetation can also be grazed extensively by wildlife.

Characteristic species of grasses, grasslike plants, forbs, and shrubs that make up most of the potential natural plant community on each soil are listed by common name. Under *Composition*, the expected proportion of each species is presented as the percentage, in air-dry weight, of the total annual production of herbaceous and woody plants. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season. Generally all of the vegetation produced is not used.

[redacted]

walnut, cottonwood, hackberry, hickory, pecan, sycamore, and water oak are harvested in lesser amounts.

Table 8 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland suitability) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates insignificant limitations or

[redacted]

of years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Woodland understory vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. Some types of forest, under proper management, can produce enough understory vegetation to support grazing of livestock or wildlife, or both.

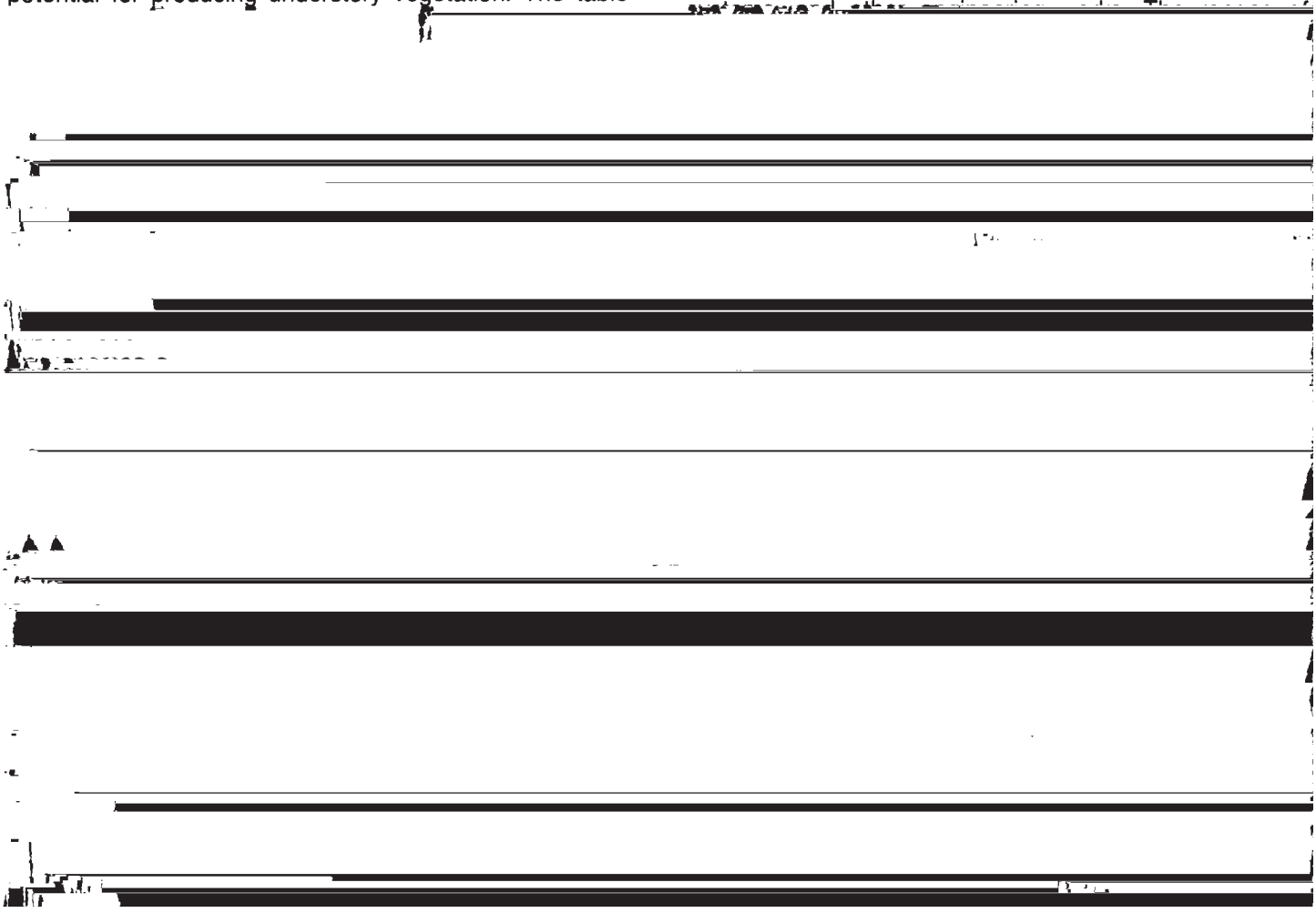
The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees, the density of the canopy, and the depth and condition of the forest litter. The density of the forest canopy affects the amount of light that understory plants receive during the growing season.

Table 9 shows, for each soil suitable for woodland, the potential for producing understory vegetation. The table

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal



sanitary facilities; and table 13, for water management. Table 12 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

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

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 10. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special plan-

ered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 10 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding,

are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 11 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 12 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

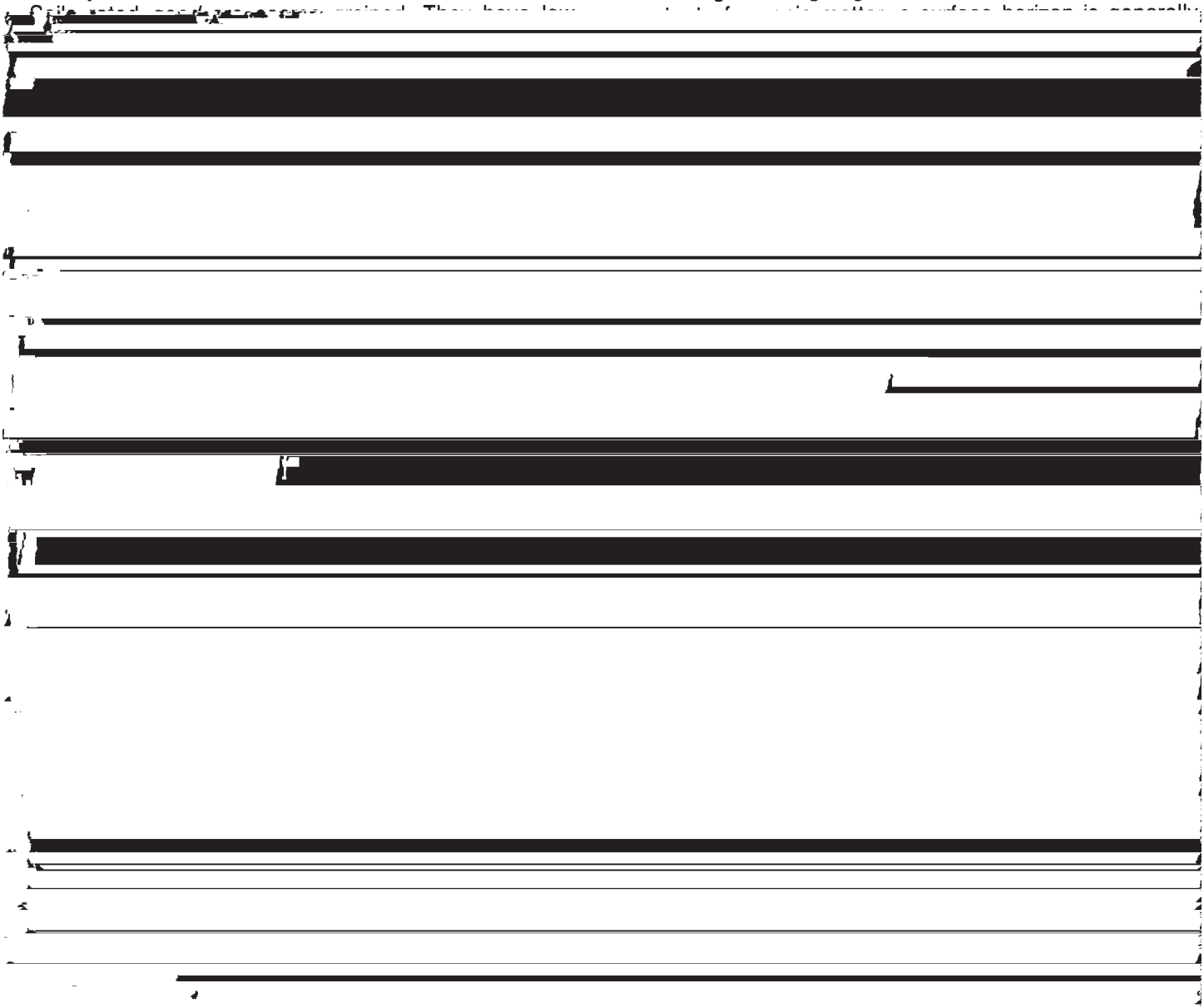
Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in

table 16 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high



shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 12 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated

preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 13 the degree of soil limitation and soil and site features that affect use are indicated for each kind of soil. This information is significant in planning,

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 14 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that mains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

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

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

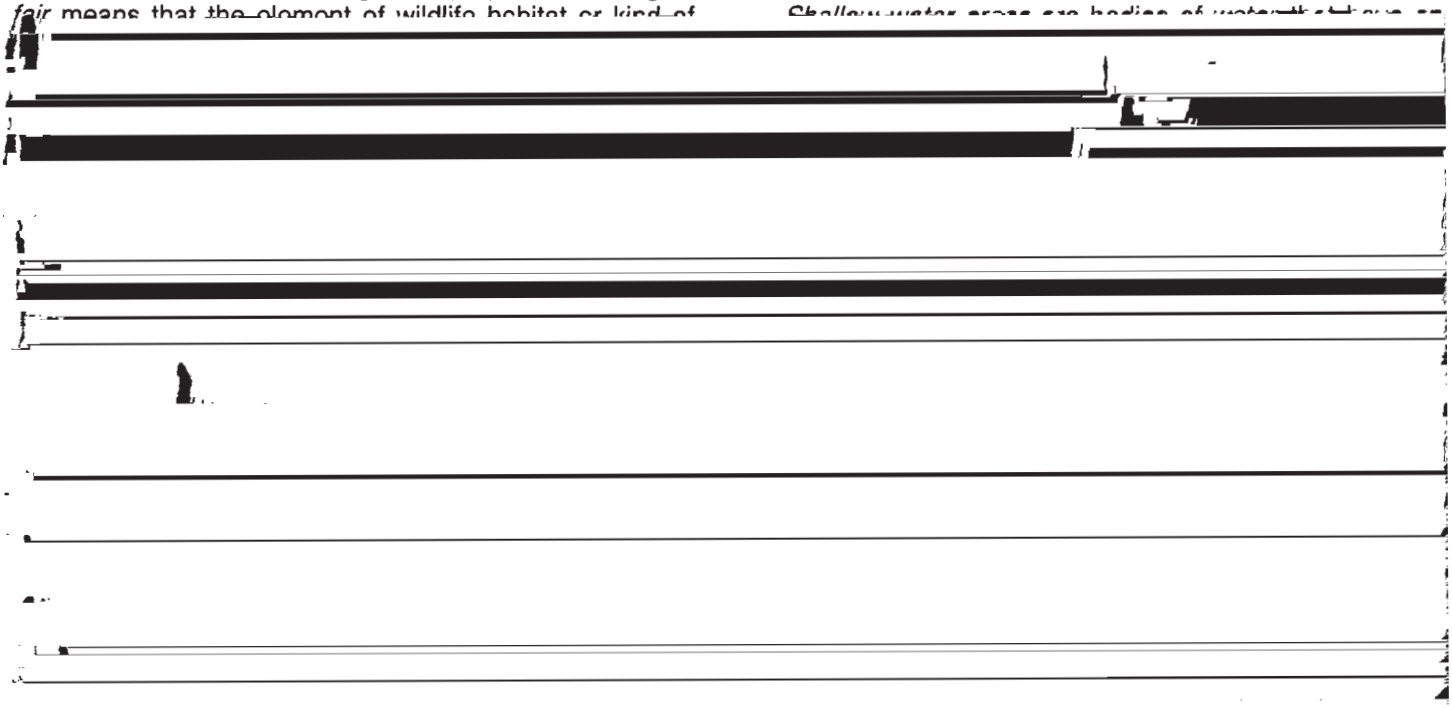
Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use.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

Wildlife habitat

Jerry F. Sykora, biologist, Soil Conservation Service, helped prepare this section.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce

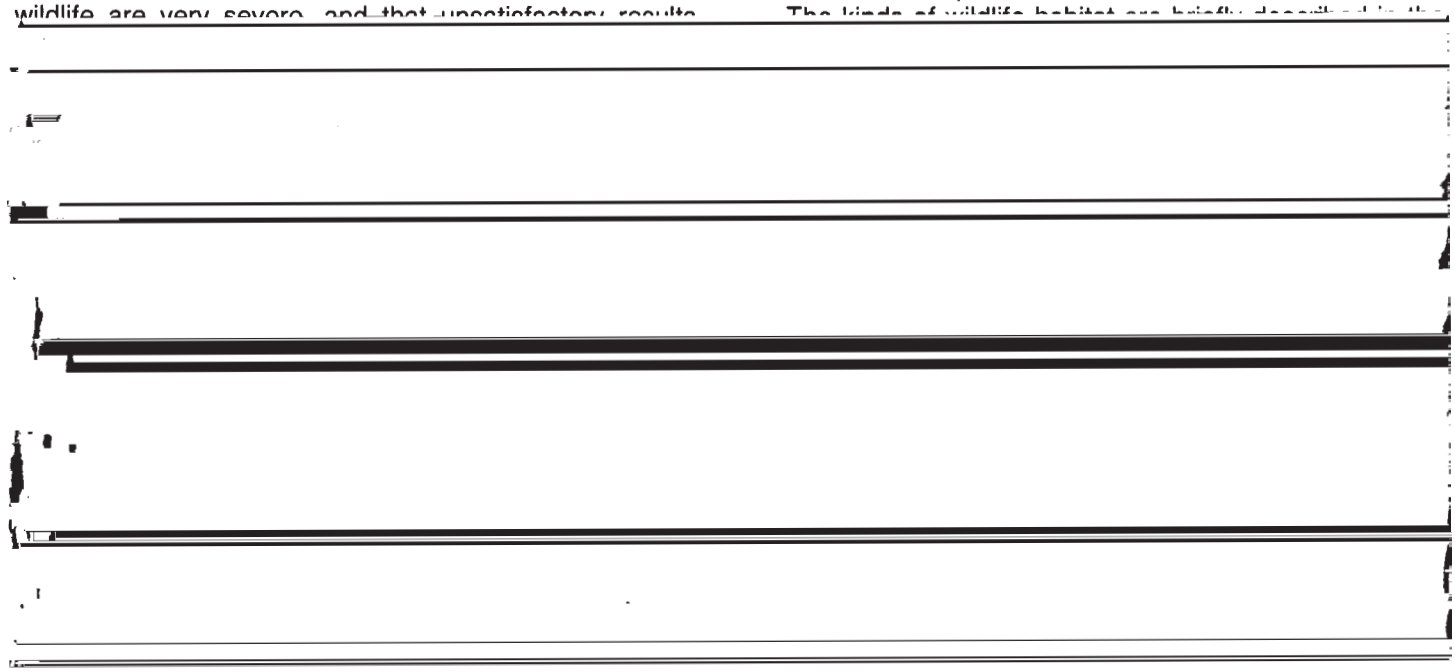
management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of



habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results

surface layer, wetness, reaction, salinity, slope, and surface stoniness.

Shallow water areas are bodies of water that have an



average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed.

The kinds of wildlife habitat are briefly described in the

zon of each soil in the survey area. They also present data about pertinent soil and water features.

Engineering properties

Table 16 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 16 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

material can be indicated by a group index number. The estimated classification, without group index numbers, is given in table 16. Also in table 16 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil

plants or crops to be grown and in the design of irrigation systems.

[redacted]

The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Salinity is expressed as the electrical conductivity of [redacted]

water after the soils have been wetted and have received precipitation from long-duration storms.

[redacted]

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils [redacted]

[redacted]

the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based

Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Fluvent (*Fluv*, meaning flood plain, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons;

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*4*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or mapping units, of each soil series are described in the section "Soil maps for detailed planning."

Alusa series

The Alusa series consists of deep, poorly drained, very slowly permeable soils that formed in clayey and loamy

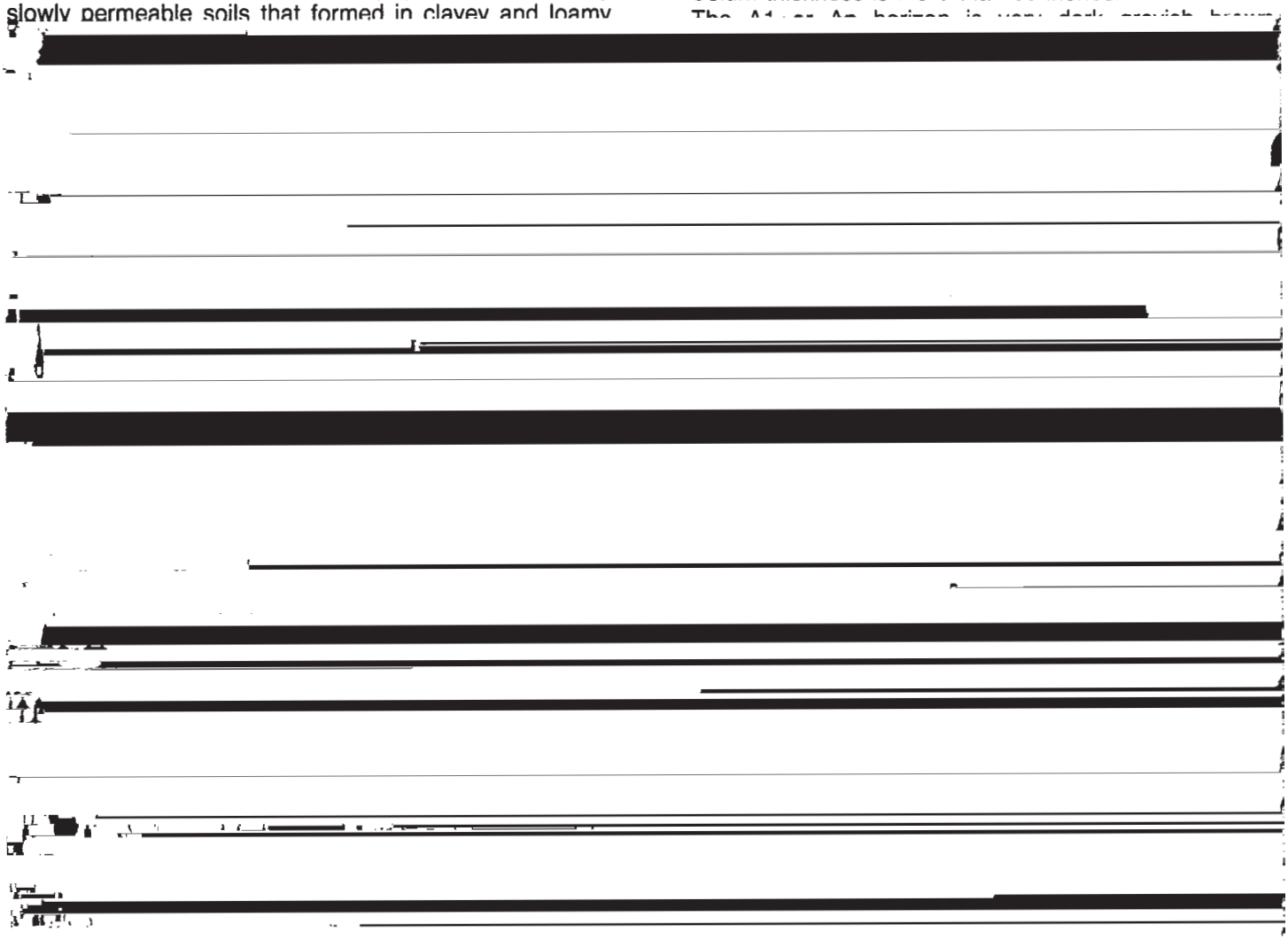
ate medium blocky structure; very firm; pressure faces or clay films on faces of peds; few fine and medium black concretions; strongly acid; gradual smooth boundary.

B23tg—36 to 54 inches; gray (10YR 6/1) clay; many coarse distinct yellowish brown (10YR 5/8) and strong brown (7.5YR 5/6) mottles; weak coarse blocky structure; very firm; pressure faces or clay films on faces of peds; few slickensides that do not intersect; common fine and medium soft black bodies and black concretions; neutral; gradual smooth boundary.

B3g—54 to 72 inches; gray (10YR 6/1) clay; many medium and coarse distinct yellowish brown (10YR 5/8) and strong brown (7.5YR 5/6) mottles; weak coarse blocky structure; very firm; shiny pressure faces on peds; few intersecting slickensides, many fine and medium black concretions; mildly alkaline.

Solum thickness is more than 60 inches.

The A1 or Ap horizon is very dark grayish brown



weak fine granular structure; very friable; slightly acid; clear smooth boundary.

A2—10 to 23 inches; strong brown (7.5YR 5/6) fine sandy loam; weak fine subangular blocky structure; friable; strongly acid; clear smooth boundary.

B21t—23 to 34 inches; strong brown (7.5YR 5/6) sandy clay loam; few fine faint yellowish red mottles and few fine faint pale brown mottles in lower part; weak medium subangular blocky structure; friable; thin clay films on faces of peds; strongly acid; gradual smooth boundary.

B22t—34 to 44 inches; strong brown (7.5YR 5/6) sandy clay loam; common fine and medium distinct pale brown (10YR 6/3) and few medium prominent red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable; thick continuous clay films on faces of peds; few clean sand grains in root channels; strongly acid; gradual wavy boundary.

B&A'2—44 to 72 inches; yellowish brown (10YR 5/4) sandy clay loam; many coarse faint or distinct light

Boggy series

The Boggy series consists of deep, somewhat poorly drained, moderately permeable soils that formed in recent alluvial sediments of Cretaceous age. These nearly level soils are on narrow, forested flood plains. They have an apparent water table within a depth of 2 feet in winter and spring. The slope is dominantly less than 1 percent.

Boggy soils are associated with Guyton soils. They are more stratified than Guyton soils. Boggy soils contain less silt and do not have glossic properties.

Typical pedon of Boggy fine sandy loam 2,000 feet south and 300 feet west of the northeast corner sec. 10, T. 7 S., R. 19 E.

A11—0 to 13 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; medium acid; clear smooth boundary.

A12—13 to 22 inches; brown (10YR 5/3) fine sandy loam; common fine distinct gray mottles; weak fine granular structure; friable; strongly acid; clear

Bosville series

The Bosville series consists of deep, moderately well drained, very slowly permeable soils that formed in mainly clayey marine sediments. These very gently sloping to moderately steep soils are on uplands. They have

Some pedons have a B3 horizon. This horizon is the same color as the B2t horizon. In places it is mottled in shades of gray, brown, or red. The B3 horizon is clay or silty clay. It is medium acid to very strongly acid.

[redacted]

and spring. Slopes range from 1 to 15 percent.

The Burleson series consists of deep, moderately well

[redacted]

depth of more than 4 feet in winter and spring. Slopes are 0 to 1 percent and are broad and smooth.

Caspiana soils are associated with Coushatta, Garton, and Karma soils. Coushatta soils do not have an argillic horizon. Karma soils do not have a mollic epipedon. Garton soils have a fine control section.

Typical pedon of Caspiana silt loam, 1,200 feet east and 600 feet north of the southwest corner sec. 3, T. 8 S., R. 18 E.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; very friable; slightly acid; clear smooth boundary.

bles and about 20 percent cobble and stone fragments of sandstone; friable; medium acid; clear smooth boundary.

B2—4 to 16 inches; strong brown (7.5YR 4/6) stony loam; weak fine granular structure; friable; about 40 percent pebble, cobble, and stone fragments of sandstone; strongly acid; clear irregular boundary.

R—16 to 20 inches; yellowish brown and gray hard sandstone; tilted and fractured.

Solum thickness is 10 to 20 inches.

The A horizon is dark grayish brown (10YR 4/2), dark brown (10YR 4/3, 3/3), or brown (10YR 5/3). It is 25 to 40 percent by volume fragments of sandstone less than

fine sandy loam and loamy very fine sand; massive; friable; calcareous; moderately alkaline.

Solum thickness is 15 to 36 inches. This soil is calcareous at depths of 15 to 30 inches.

The A horizon is reddish brown (5YR 4/3, 4/4). Unless limed, it is slightly acid to neutral.

The B2 horizon is reddish brown (5YR 4/3, 4/4, 5/3, 5/4) and light reddish brown (5YR 6/3, 6/4). It is slightly acid to moderately alkaline.

The C horizon is reddish brown (5YR 4/3, 4/4, 5/3, 5/4), light reddish brown (5YR 6/3, 6/4), and reddish yellow (5YR 6/6). It contains strata of silt loam, very fine sandy loam, loamy very fine sand, or silty clay loam. This horizon is neutral to moderately alkaline.

Dela series

The Dela series consists of deep, moderately well drained, moderately rapidly permeable soils that formed in mainly loamy sediments. These nearly level soils are on broad forested flood plains along major streams and rivers. They have an apparent water table at a depth of 3 to 5 feet in winter and spring. The slope is dominantly less than 1 percent.

Dela soils are associated with Guyton and Speer soils. Both Guyton and Speer soils have an argillic horizon. Guyton soils are poorly drained.

loam, sandy loam, or loam. Some pedons have a buried horizon below 40 inches. The C horizon ranges from slightly acid to strongly acid.

Durant series

The Durant series consists of deep, moderately well drained, very slowly permeable soils that formed in material weathered from calcareous shales or clay beds. These very gently sloping soils are on smooth prairie uplands. The slope is 1 to 3 percent.

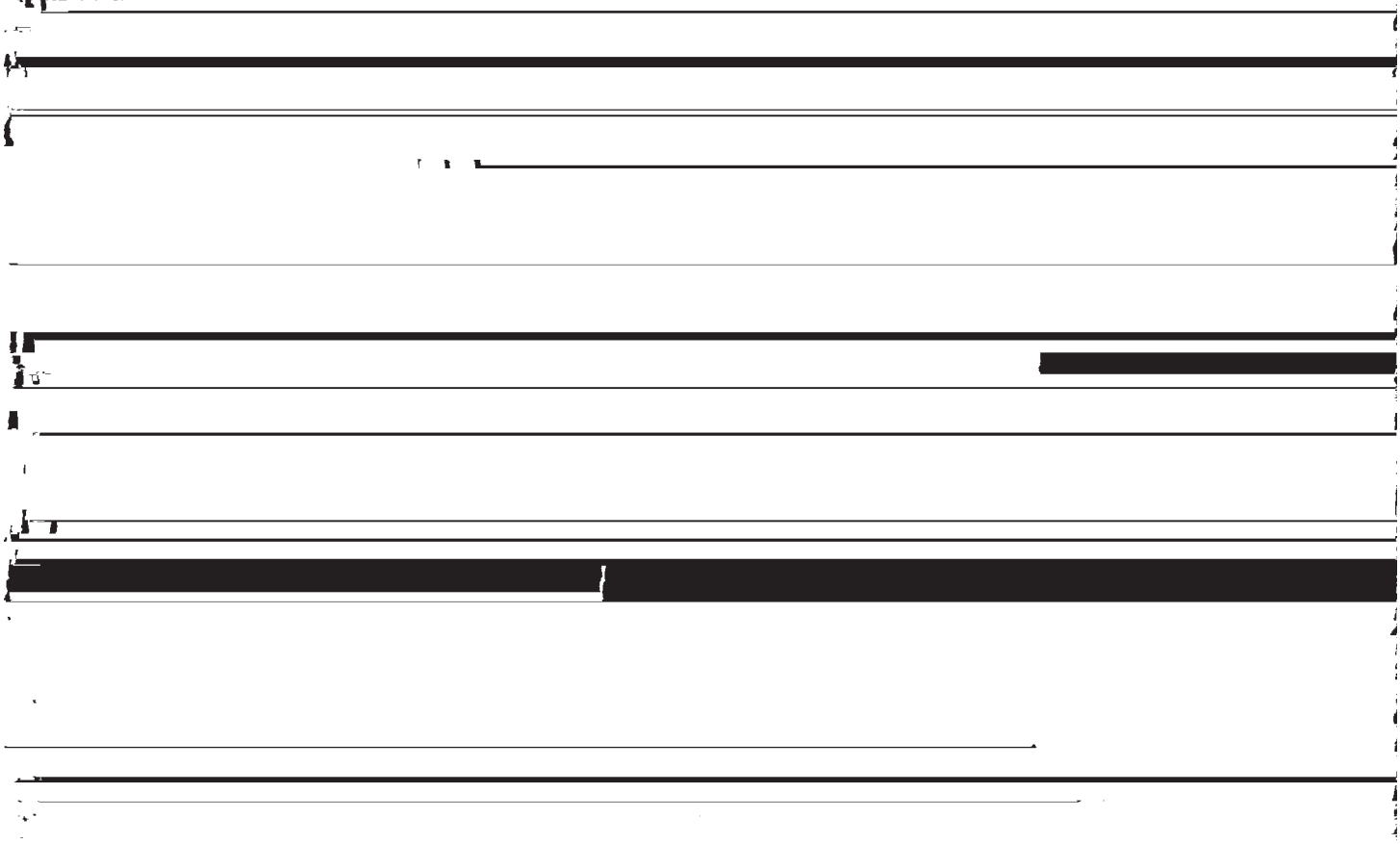
Durant soils are associated with Burleson soils. They differ in having an argillic horizon.

Typical pedon of Durant silt loam, 1 to 3 percent slopes, 1,200 feet west and 1,100 feet north of the southeast corner sec. 29, T. 5 S., R. 16 E.

A1—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; slightly acid; clear smooth boundary.

B1—8 to 11 inches; dark brown (10YR 3/3) silty clay loam; weak fine subangular blocky structure; firm; slightly acid; clear smooth boundary.

B21t—11 to 36 inches; olive brown (2.5Y 4/4) clay; many fine prominent red mottles; strong medium subangular blocky structure; extremely firm; many shiny faces on peds; few vertical streaks of A horizon material; slightly acid; gradual smooth boundary.



Colors and mottles in the B3 horizon are similar to those in the B2t horizon but include light yellowish brown (2.5Y 6/4), light olive brown (2.5Y 5/4, 5/6), and olive yellow (2.5Y 6/6). The B3 horizon is clay or silty clay. It ranges from slightly acid to moderately alkaline.

Elysian series

The Elysian series consists of deep, moderately well drained, moderately permeable soils that formed in loamy sediments. These nearly level soils are on circular mounds on broad forested terraces. They have a perched water table at a depth of 3 to 6 feet in winter and spring. The slope is dominantly less than 1 percent.

Ferris series

The Ferris series consists of deep, well drained, very slowly permeable soils that formed in material weathered from calcareous shales and clays. These gently sloping to strongly sloping soils are on prairie uplands. Slopes range from 3 to 12 percent.

Ferris soils are associated with Burleson, Heiden, and Swink soils. They have a thinner A horizon than Burleson and Heiden soils. They are deeper than Swink soils.

Typical pedon of Ferris clay, 3 to 5 percent slopes, 2,500 feet west and 100 feet south of the northeast corner sec. 25, T. 5 S., R. 13 E.

A—0 to 8 inches; very dark grayish brown (10YR 3/2)

7/8). Many pedons are coarsely and prominently mottled. This horizon is strongly weathered shaly clay or calcareous shale.

Garton series

The Garton series consists of deep, moderately well drained, slowly permeable soils formed in loamy alluvial sediments. These nearly level soils are on forested low terraces along the Red River and Boggy Creek. They have a perched water table at a depth of 2 to 3 feet in winter and spring. The slope is 0 to 1 percent.

Garton soils are associated with Caspiana and Pledger soils. In contrast with Caspiana soils, they have gray mottles in the upper B2t horizon. They are better drained than Pledger soils and have less clay in the A horizon.

Typical pedon of Garton silty clay loam, 400 feet west and 450 feet south of the northeast corner sec. 10, T. 8 S., R. 18 E.

Ap—0 to 6 inches; very dark gray (10YR 3/1) silty clay loam, moderate medium and fine granular structure; friable; neutral; clear smooth boundary.

B1—6 to 26 inches; very dark gray (10YR 3/1) silty clay loam; few fine faint light gray mottles; moderate medium and fine subangular blocky structure; firm; neutral; gradual smooth boundary.

B21t—26 to 36 inches; dark brown (7.5YR 3/2) silty clay loam; few medium distinct reddish brown (5YR 5/4) mottles; moderate medium and fine granular structure; firm; patchy clay films or pressure faces on [illegible]

The B3 horizon is yellowish red (5YR 5/6) or reddish yellow (5YR 6/6). It is loam or clay loam. It is neutral or mildly alkaline.

Guyton series

The Guyton series consists of deep, poorly drained, slowly permeable soils that formed in loamy alluvial sediments. These nearly level soils are on forested flood plains along the Kiamichi River and Boggy Creek. They have an apparent water table within a depth of 1 1/2 feet in winter and spring. The slope is 0 to 1 percent.

Guyton soils are mapped next to Boggy, Dela, Elysian, and Wrightsville soils. Guyton soils have more clay than Boggy, Dela, and Elysian soils. They have less clay in the B horizon than Wrightsville soils.

Typical pedon of Guyton silt loam, 400 feet west at the southeast corner sec. 20, T. 5 S., R. 18 E.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; few fine faint gray mottles; weak fine granular structure; friable; strongly acid; clear smooth boundary.

A21g—4 to 10 inches; grayish brown (10YR 5/2) silt loam; few medium distinct dark yellowish brown (10YR 4/4) and few fine faint gray mottles; weak fine granular structure; friable; strongly acid; clear wavy boundary.

A22g—10 to 18 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangu[illegible]

B3tg—52 to 72 inches; light gray (10YR 6/1) silty clay [illegible] few fine crystals and threads of gypsum; calcareous, [illegible]

4/2) and dark brown (7.5YR 4/4) mottles; peds are irregular shaped; many distinct grooved intersecting slickensides with distinct parallelepipeds tilted 30 to 60 degrees; few slickensides have neutral gray color on the surface of the slickenside; very firm; few fine reddish brown concretions; common soft masses and few pitted concretions of calcium carbonate; few fragments of limestone in lower part; calcareous, moderately alkaline.

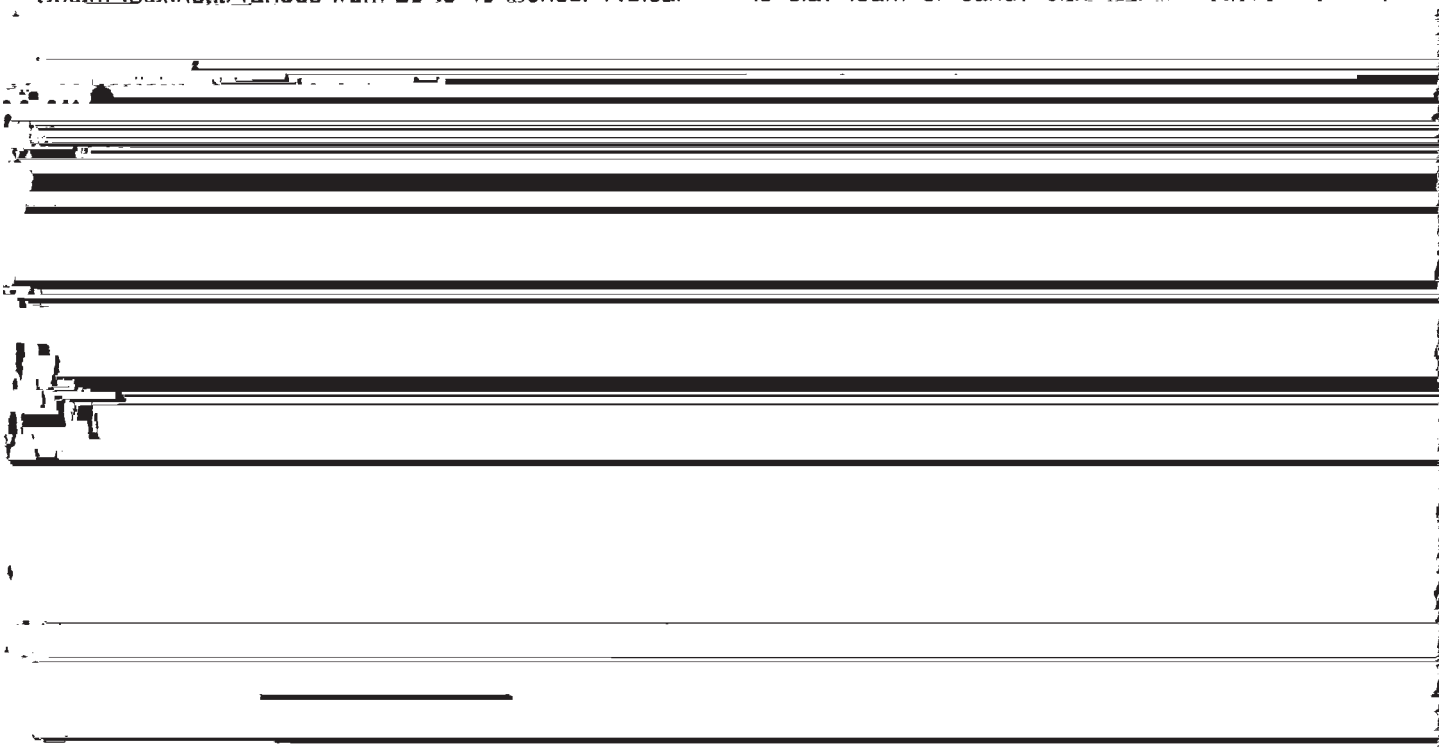
Thickness of the solum ranges from 36 to 80 inches. Depth to limestone bedrock is more than 48 inches. Untilled soils have a gilgai microrelief. The cycles of microrelief consist of knolls 3 to 10 inches higher than depressions, repeated at linear intervals of 5 to 12 feet. [illegible]

The A horizon is very dark grayish brown (10YR 3/2), very dark gray (10YR 3/1), dark brown (10YR 3/3; 7.5YR 3/2), or very dark brown (10YR 2/2). It ranges from medium acid to mildly alkaline. The A12 horizon has distinct or prominent mottles in shades of yellow or brown.

The B2g horizon is dark gray (10YR 4/1) or gray (10YR 5/1) and has few to common, fine or medium, distinct mottles in shades of brown. The lower part also ranges to brown (10YR 4/3) or dark yellowish brown (10YR 4/4) and is mottled in shades of gray. The B2g horizon ranges from medium acid to mildly alkaline. This horizon is silt loam, silty clay loam, or clay loam.

The Hopco soils in this survey area are considered taxadjuncts to the Hopco series. They have a grayer B

Solum thickness ranges from 20 to 40 inches. Typical-



parts of the mass between 10 and 25 inches, and calcareous in all parts below 25 inches.

The Ap or A1 horizon is reddish brown (5YR 4/3, 4/4) or dark reddish brown (5YR 3/3, 3/4). Reaction is neutral or mildly alkaline.

The B or C horizon is reddish brown (5YR 4/3, 4/4, 5/3, 5/4), yellowish red (5YR 4/6, 5/6), or reddish yellow (5YR 6/6). Texture of the B horizon and upper part of the C horizon is loam, silt loam, very fine sandy loam, and fine sandy loam. The lower part of the C horizon is fine sandy loam, very fine sandy loam, loam, silt loam, and silty clay loam.

The B horizon ranges from neutral to moderately alkaline. The C horizon is mildly alkaline or moderately alkaline.

Karma series

The Karma series consists of deep, well drained, moderately permeable soils that formed in loamy sediments under a mixed cover of hardwood forest. These nearly level soils are on forested terraces along the Red River. The slope is 0 to 1 percent.

Karma soils are associated with Caspiana, Coushatta, and Kiomatia soils. Caspiana soils have a mollic epipedon. Coushatta soils do not have an argillic horizon. Karma soils are not so coarse textured as Kiomatia soils.

Typical pedon of Karma fine sandy loam, 0 to 1 per-

is clay loam or sandy clay loam. Reaction is medium

The C horizon is yellowish red (5YR 4/6, 5/6) or reddish brown (5YR 4/4, 5/4). Texture is very fine sandy loam, loam, or clay loam. Some profiles have stratification of sandier textures. Reaction is slightly acid to mildly alkaline.

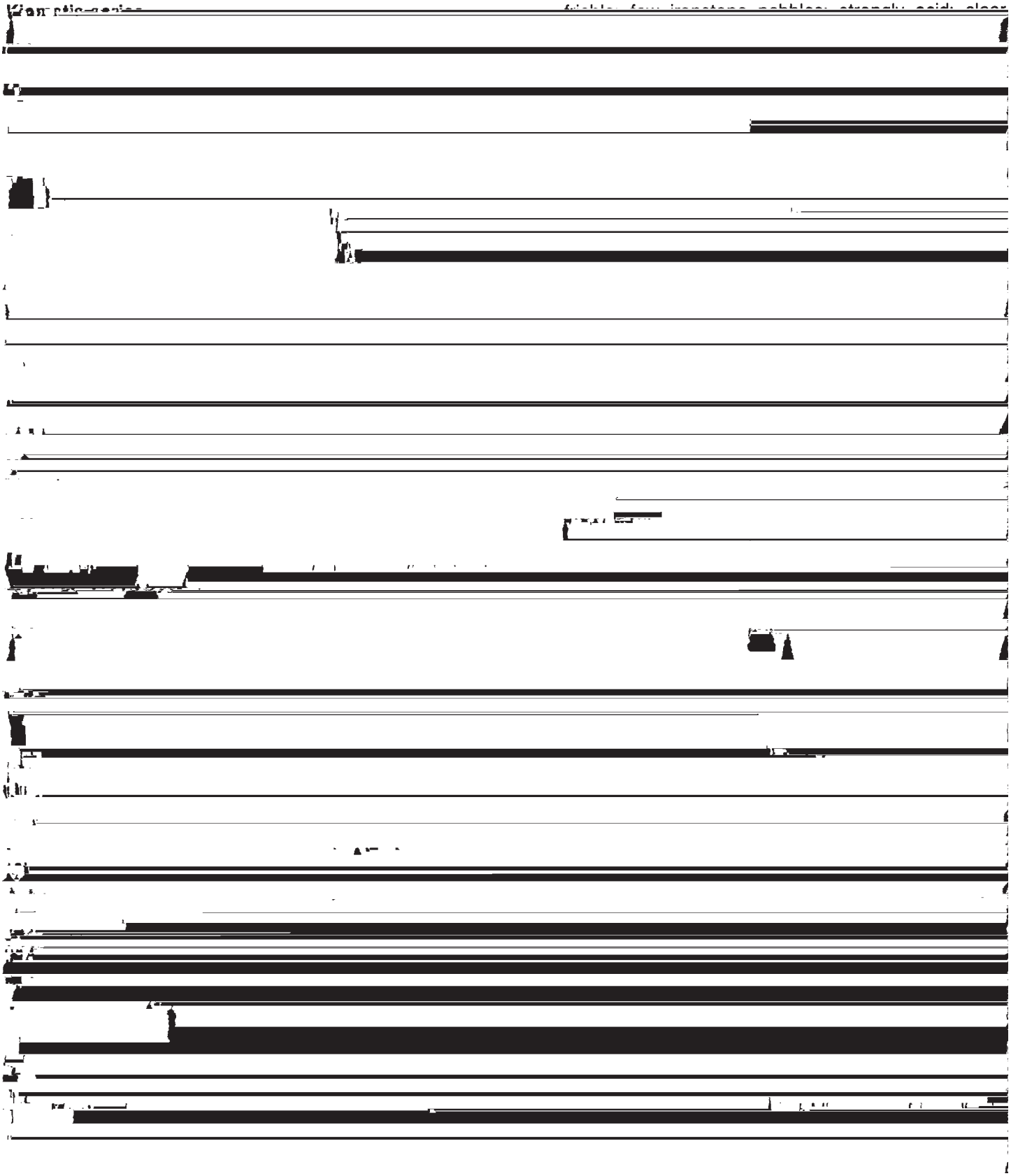
Kaufman series

The Kaufman series consists of deep, somewhat poorly drained, very slowly permeable soils that formed in clayey alluvial sediments. These nearly level soils are on forested flood plains along Boggy Creek and smaller creeks and drains. They have an apparent water table within a depth of 3 1/2 feet in winter and spring. The slope is dominantly less than 1 percent.

Kaufman soils are associated with Hopco, Trinity, and Tuscumbia soils. They contain more clay than Hopco soils. In contrast with Trinity soils, they are not calcareous in the upper 24 inches. They have a darker A horizon than Tuscumbia soils.

Typical pedon of Kaufman clay, depressional, 600 feet east and 10 feet north of the southwest corner sec. 34, T. 6 S., R. 20 E.

A1—0 to 26 inches; black (10YR 2/1) clay; strong medium and fine subangular blocky structure; firm;



Larue series

The Larue series consists of deep, well drained, moderately permeable soils that formed in unconsolidated sandy and loamy marine and fluvial sediments. These gently sloping soils are on forested uplands. Slopes are 2 to 5 percent.

Larue soils are associated with Bernow and Bosville soils. Larue soils have a thicker sandy surface layer than those soils. They contain less clay in the argillic horizon than Bosville soils.

Typical pedon of Larue loamy fine sand, 2 to 5 percent slopes, 800 feet north and 1,600 feet west of the southeast corner sec. 5, T. 5 S., R. 16 E.

A1—0 to 10 inches; brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; medium acid; clear smooth boundary.

A2—10 to 28 inches; light yellowish brown (10YR 6/4) loamy fine sand; single grained; very friable; medium acid; clear smooth boundary.

B21t—28 to 42 inches; yellowish red (5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; thin continuous clay films on faces of peds; many fine and medium pores; medium acid; gradual smooth boundary.

B22t—42 to 68 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; thin discontinuous clay films on faces of peds; few fine pores; medium acid; gradual wavy boundary.

B23t—68 to 80 inches; yellowish red (5YR 5/8) sandy clay loam; common medium distinct red (2.5YR 4/6) mottles; few streaks of pale brown (10YR 6/3) loamy sand; weak coarse blocky structure; firm; medium acid.

Solum thickness is 60 to more than 80 inches.

Latanier series

The Latanier series consists of deep, somewhat poorly drained, very slowly permeable soils that formed in clayey and loamy alluvial sediments. These nearly level soils are on forested plains along the Red River. They have an apparent water table at a depth of 1 to 3 feet in winter and spring. The slope is dominantly less than 1 percent.

Latanier soils are closely associated with Coushatta and Redlake soils. Coushatta soils contain less clay than Latanier soils. Latanier soils have a darker A horizon than Redlake soils.

Typical pedon of Latanier clay, 2,500 feet south and 1,400 feet east of the northwest corner sec. 36, T. 7 S., R. 17 E.

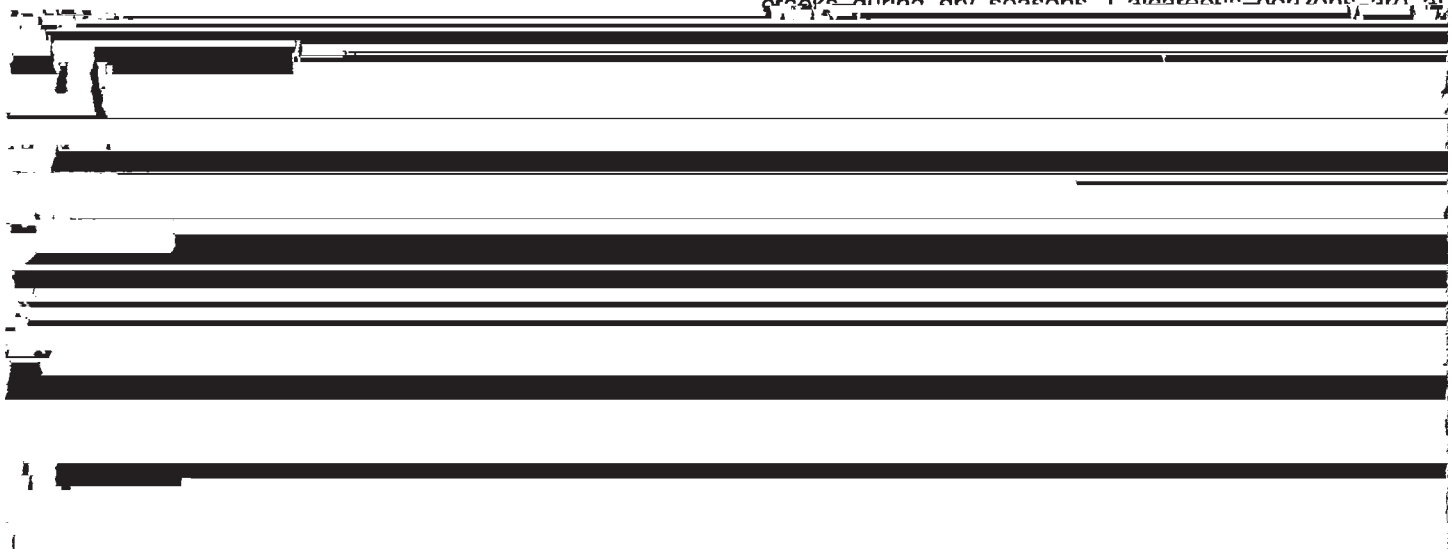
A1—0 to 12 inches; dark reddish brown (5YR 3/2) clay; moderate fine blocky structure and moderate medium subangular blocky structure; firm; common fine roots; moderately alkaline; clear smooth boundary.

B—12 to 23 inches; dark reddish brown (5YR 3/4) clay; moderate fine blocky structure; firm; common shiny surfaces on faces of peds; few vertical streaks of A1 material; moderately alkaline; clear smooth boundary.

IIC1—23 to 32 inches; reddish brown (5YR 4/4) loam; weak fine and medium subangular blocky structure; friable; a few thin lenses of yellowish red (5YR 5/6) fine sandy loam; calcareous; moderately alkaline; clear smooth boundary.

IIC2—32 to 66 inches; reddish brown (5YR 5/4) very fine sandy loam; massive; very friable; common thin strata of variable textures; calcareous; moderately alkaline.

Solum thickness is 20 to 36 inches. The A horizon [illegible] during dry seasons. Calcareous horizons are at



from limestone. These very gently sloping soils are on broad prairie uplands. Slopes are 1 to 3 percent.

Lula soils are associated with Hollywood, Newtonia, and Swink soils. Hollywood soils have a higher content of clay. Newtonia soils are deeper. Swink soils are shallow and very shallow.

Typical pedon of Lula silt loam, 1 to 3 percent slopes, [redacted]

sec. 11, T. 6 S., R. 17 E.

A1—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; slightly acid; clear smooth boundary.

[redacted]

table at a depth of 1 to 2 feet in winter and spring. Slopes are 1 to 3 percent.

Muskogee soils are associated with Alusa, Bernow, Bosville, Newtonia, and Whakana soils. They are better drained than Alusa soils. They have a higher content of silt than Bernow, Bosville, and Whakana soils. In contrast with Newtonia soils, Muskogee soils do not have a

Typical pedon of Muskogee silt loam, 1 to 3 percent slopes, 125 feet north and 2,500 feet east of the southwest corner sec. 4, T. 6 S., R. 19 E.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt [redacted]

The B21t horizon is yellowish brown (10YR 5/4, 5/6) or strong brown (7.5YR 5/6). It has mottles in shades of gray. It is silty clay loam or silt loam.

In some profiles the B22t horizon or B23t horizon is light gray (10YR 6/1, 7/1, 7/2) or light brownish gray (10YR 6/2). In some it is coarsely mottled in shades of red or brown. It is silty clay or clay. The B2t horizon is medium acid or strongly acid.

Newtonia series

The Newtonia series consists of deep, well drained, moderately permeable soils that formed in loamy or clayey sediments or in material weathered from limestone. These very gently sloping soils are on prairie uplands. Slopes are 1 to 3 percent.

Newtonia soils are associated with Lula and Muskogee soils. In Lula soils the solum thickness and depth to limestone are 40 to 60 inches. Muskogee soils do not

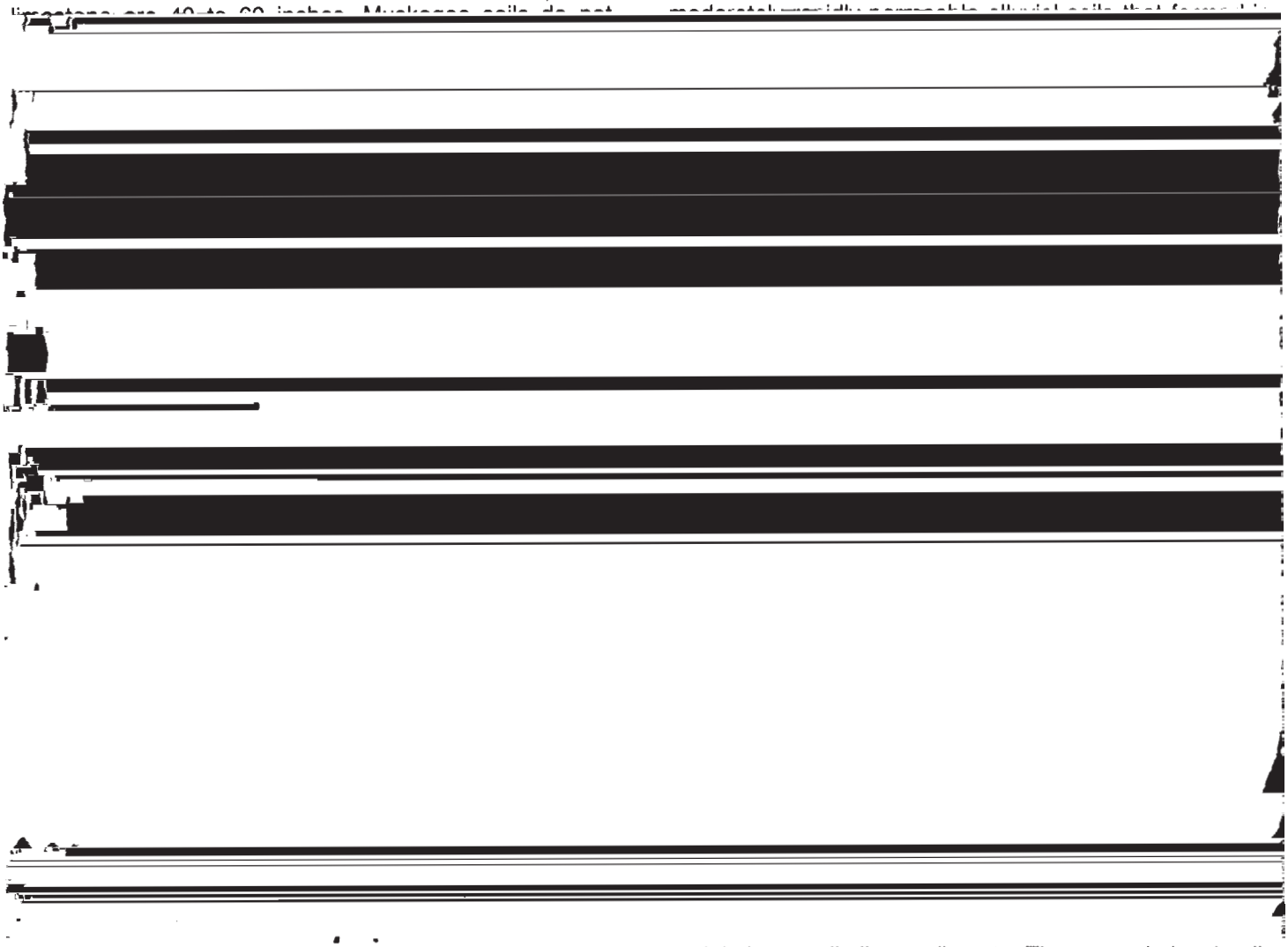
The B1 horizon is reddish brown (5YR 4/3, 4/4), dark reddish brown (5YR 3/3), or dark brown (7.5YR 3/2). It is silt loam or silty clay loam. It ranges from strongly acid to slightly acid.

The B2t horizon is yellowish red (5YR 4/6, 4/8), reddish brown (2.5YR 4/4; 5YR 4/3, 4/4), red (2.5YR 4/6, 4/8), or dark reddish brown (2.5YR 3/4; 5YR 3/3, 3/4). It is silty clay loam in the upper part and silty clay or silty clay loam in the lower part. This horizon ranges from medium acid to strongly acid.

The B3 horizon is red (2.5YR 4/6, 4/8) or yellowish red (5YR 4/6, 4/8). Mottles are in shades of brown or yellow. This horizon is clay or silty clay. It ranges from medium acid to neutral.

Oklared series

The Oklared series consists of deep, well drained, moderately slowly permeable alluvial soils that formed in



have a mollic epipedon.

Typical pedon of Newtonia silt loam, 1 to 3 percent slopes, 2,500 feet east and 1,600 feet north of the

mainly loamy alkaline sediments. These nearly level soils are on flood plains under a cover of mixed hardwood forest. They have an apparent water table at a depth of

The C horizon is yellowish red (5YR 5/6), strong tals of gypsum; few concretions of calcium carbon-

light gray (10YR 7/2) mottles; moderate medium blocky structure; very firm; shiny pressure faces; few soft masses and common fine calcium carbonate, pitted concretions; calcareous; moderately alkaline; gradual smooth boundary.

C—56 to 72 inches; reddish brown (5YR 5/4) clay; common medium distinct dark gray (10YR 4/1) and light gray (10YR 7/2) mottles; massive; firm; thin strata of clay loam and silt loam; common soft bodies and common fine concretions of calcium carbonate; calcareous; moderately alkaline.

Solum thickness is more than 40 inches. The 10- to 40-inch control section is clay or silty clay. Wide cracks are common during dry periods.

The A horizon is black (10YR 2/1; N 2/0), very dark brown (10YR 2/2; 7.5YR 2/2), or very dark grayish brown (10YR 3/2). It is 24 to 40 inches thick. It ranges from slightly acid to mildly alkaline.

The B horizon is dark reddish brown (5YR 3/3, 3/4), reddish brown (5YR 4/3, 4/4, 5/3, 5/4), or dark brown (7.5YR 3/2, 4/2, 4/4). Mottles in the lower part are in shades of gray. The B horizon is mildly alkaline or moderately alkaline.

The C horizon is reddish [illegible]

Solum thickness ranges from 30 to 60 inches. The soil cracks when dry.

The A1 or Ap horizon is dusky red (2.5YR 3/2), weak red (2.5YR 4/2), dark reddish brown (5YR 3/3), or reddish brown (5YR 4/4). It is mildly alkaline or moderately alkaline and calcareous in some pedons.

The B horizon is dark reddish brown (2.5YR 3/4; 5YR 3/4), reddish brown (2.5YR 4/4; 5YR 4/3, 4/4), red (2.5YR 4/6), or yellowish red (5YR 4/6, 5/6). It is silty clay or clay.

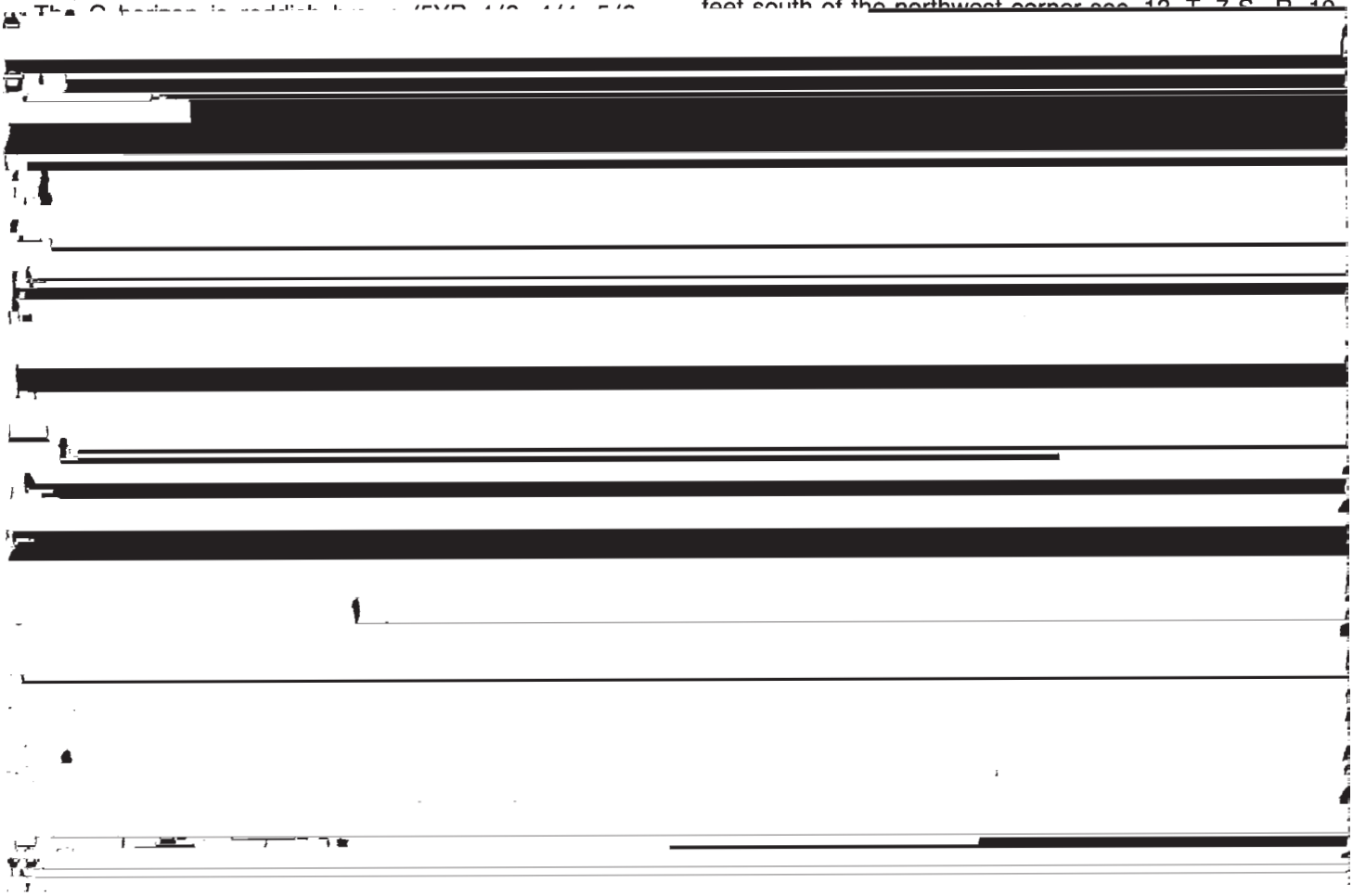
The C horizon is similar to the B horizon in color. It is mostly clay loam stratified with silt loam, loam, or clay.

Roebuck series

The Roebuck series consists of deep, somewhat poorly to poorly drained, very slowly permeable soils that formed in mainly clayey sediments. These nearly level soils are on forested flood plains along the Red River. The slope is 0 to 1 percent.

Roebuck soils are associated with Pledger and Redlake soils. They have a thinner A horizon than Pledger soils. They are more poorly drained than Redlake soils and have a mollic epipedon.

Typical pedon of Roebuck clay, 2,000 feet east and 50 feet south of the northwest corner sec. 12, T. 7 S., R. 10



mildly alkaline or moderately alkaline and is calcareous below 20 inches.

The C horizon is reddish brown (5YR 5/4) or yellowish red (5YR 5/6). It is clay, clay loam, or silt loam and is mildly alkaline or moderately alkaline.

Romia series

The Romia series consists of deep, well drained, moderately permeable soils that formed in material weathered from sandstone of marine deposits. These gently sloping to strongly sloping soils are on slightly convex side slopes and crests of ridges on uplands. Slopes range from 3 to 12 percent.

Romia soils are associated with Bernow and Bosville soils. Bernow and Bosville soils do not have sandstone within a depth of 60 inches.

Typical pedon of Romia fine sandy loam, in an area of Bernow- Romia complex, 2 to 8 percent slopes, eroded, 700 feet east and 1,700 feet south of the northwest corner sec. 12, T. 5 S., R. 16 E.

A1—0 to 4 inches; dark brown (10YR 3/3) fine sandy

clay loam or clay loam. It ranges from medium acid to very strongly acid.

The underlying weakly cemented sandstone is rippable. It is laminated with bands of ironstone in some areas.

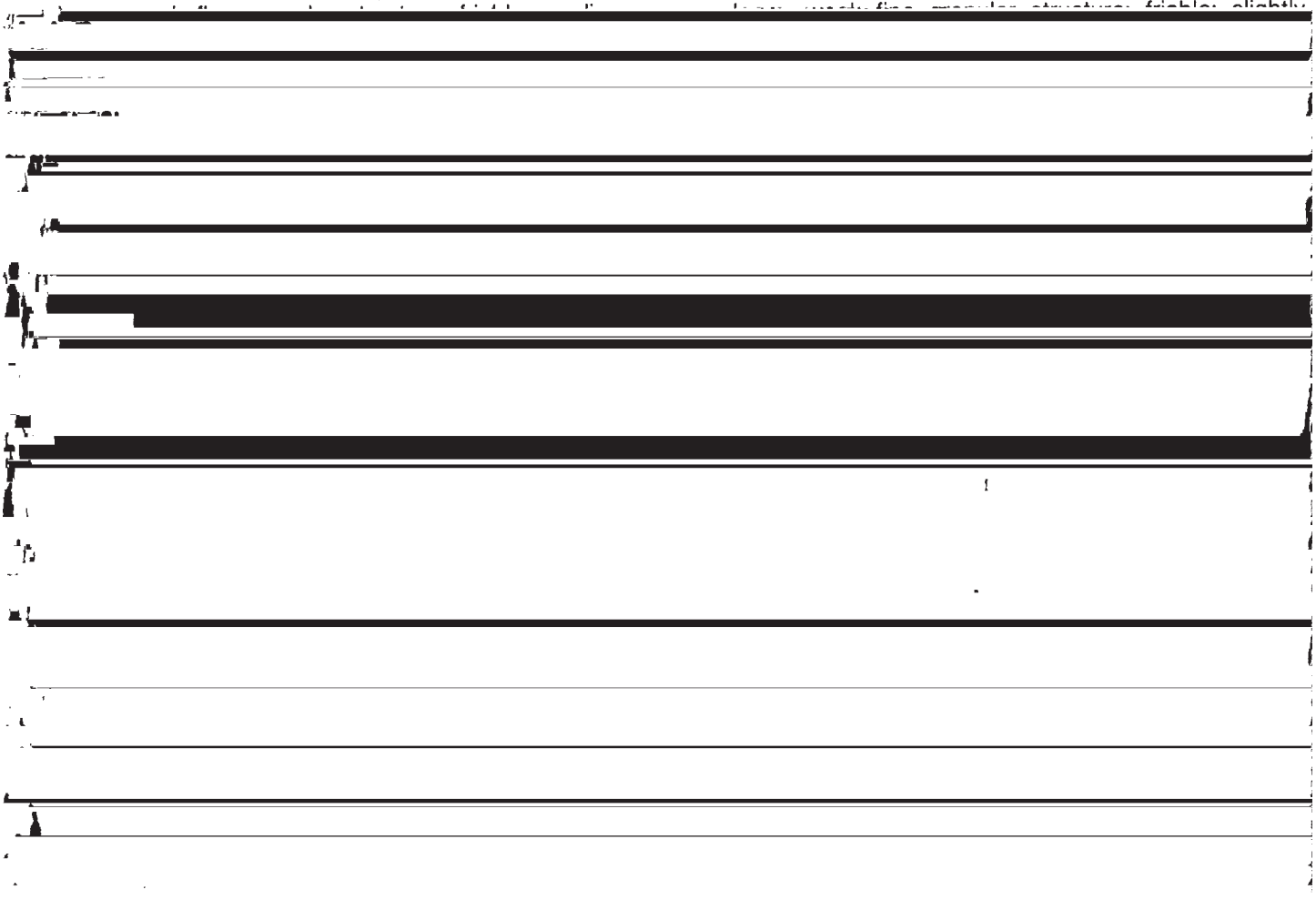
Ruston series

The Ruston series consists of deep, well drained, moderately permeable soils that formed in loamy sediments. These very gently sloping to gently sloping soils are on broad forested uplands. Slopes are 1 to 5 percent.

The Ruston soils are associated with Kirvin, Smithdale, and Tenaha soils. Kirvin soils have a clayey control section. Smithdale soils are steeper and have a significant decrease in clay at a depth of 60 inches. Tenaha soils have a solum thickness of 40 to 60 inches.

Typical pedon of Ruston fine sandy loam, 1 to 3 percent slopes, 2,200 feet west, 2,300 feet south of the northeast corner sec. 10, T. 6 S., R. 19 E.

A1—0 to 6 inches; dark brown (10YR 4/3) fine sandy



The B21t or B22t horizon is red (2.5YR 4/6, 4/8) or yellowish red (5YR 4/6, 4/8, 5/6, 5/8). It is loam, clay loam, or sandy clay loam. It is strongly acid or very strongly acid.

The B23t horizon has colors and reaction similar to those in the upper B21t horizon. It is loam or sandy clay loam. Some pedons have a few pockets of clean sand grains.

The B part of the B&A'2 horizon is the same color as the B2t horizon, or it is coarsely mottled in shades of red, yellow, brown, or gray. The A'2 part of the B&A'2 horizon is light gray (10YR 6/1, 7/1, 7/2), pinkish gray (7.5YR 6/2, 7/2), light brownish gray (10YR 6/2), or white (10YR 8/1, 8/2). The B&A'2 horizon is strongly

C—58 to 65 inches; yellowish brown (10YR 5/4) very gravelly sandy loam and loamy sand; massive; friable; about 75 percent by volume quartz gravel; strongly acid.

Solum thickness ranges from 35 to 60 inches.

The A1 horizon is dark grayish brown (10YR 4/2), brown (10YR 4/3), and dark brown (7.5YR 4/2, 4/4). The A2 horizon is yellowish brown (10YR 5/6, 5/4), light yellowish brown (10YR 6/4), and brown (7.5YR 5/4). The A horizon is strongly acid or very strongly acid, but in limed areas it ranges to neutral. Gravel content ranges from 5 to 35 percent.

The B2t horizon is yellowish red (5YR 5/6, 5/8), red

ding planes; calcareous, moderately alkaline; clear smooth boundary.

C3—40 to 72 inches; reddish brown (5YR 4/4) very fine sandy loam; structureless; very friable; few thin strata of loam and loamy fine sand; calcareous, moderately alkaline.

The Ap or A1 horizon is dark brown (7.5YR 3/2, 4/4), dark reddish brown (5YR 3/2, 3/3, 3/4), or reddish brown (5YR 4/3).

The C horizon is strong brown (7.5YR 5/6), reddish brown (5YR 4/4, 5/4), light reddish brown (5YR 6/4), yellowish red (5YR 4/6, 5/6), or reddish yellow (5YR 6/6; 7/5YR 6/6). Texture is very fine sandy loam and loamy very fine sand with thin strata of fine sandy loam, silt loam, very fine sand, and loam.

Smithdale series

The Smithdale series consists of deep, well drained, moderately permeable soils that formed in loamy marine sediments. These very gently sloping to strongly sloping [redacted] percent.

Smithdale soils are associated with Clebit, Kirvin, Ruston, Tenaha, and Tuskahoma soils. They are deeper than Clebit soils and have less clay than Kirvin soils. Ruston soils either do not have a significant decrease in

The A1 horizon is dark grayish brown (10YR 4/2), very dark brown (10YR 3/3), or dark brown (10YR 4/3). The A horizon is strongly acid or very strongly acid, but in limed areas it ranges to neutral.

The A2 horizon is brown (7.5YR 4/4; 10YR 5/3), light yellowish brown (10YR 6/4), grayish brown (10YR 5/2), or yellowish brown (10YR 5/4).

Some pedons have a B1 horizon of strong brown (7.5YR 5/6, 5/8), brown (7.5YR 4/4), or yellowish red (5YR 5/6).

The B21t or B22t horizon is red (2.5YR 4/6, 4/8) or yellowish red (5YR 4/6, 4/8, 5/6, 5/8). It is loam, clay loam, or sandy clay loam and is strongly acid or very strongly acid.

The B23t horizon has colors similar to those in the upper part of the B2t horizon. It is loam or sandy clay loam. This horizon is 5 to 15 percent pockets of clean sand grains. It is strongly acid or very strongly acid.

The Smithdale soils in Choctaw County, in the western drier part of the series range, receive less rainfall than is typical of Smithdale soils in other parts of the country. Base saturation increases gradually from east to west

Speer series

The Speer series consists of deep, well drained, moderately permeable soils that formed in loamy sediments. These nearly level soils are on low terraces under a

and bridging sand grains; strongly acid; gradual smooth boundary.

B3—44 to 72 inches; pale brown (10YR 6/3) sandy loam; common medium faint grayish brown (10YR 5/2) mottles; massive; friable; strongly acid.

Thickness of the solum ranges from 50 to more than 60 inches.

Solum thickness is 6 to 20 inches. The content of coarse fragments ranges from 10 to 60 percent in the A11 horizon and from 55 to 85 percent in the A12 horizon. The pedon is neutral to moderately alkaline and is moderately alkaline and calcareous in at least the lower part.

The A horizon is black (10YR 2/1), very dark grayish brown (10YR 3/2), very dark gray (10YR 3/1), very dark

4/2) or brown (10YR 5/3, 4/3). It is strongly acid or medium acid.

The B1 horizon is brown (10YR 4/3, 5/3) or yellowish brown (10YR 5/4, 5/6, 5/8). It is fine sandy loam or loam. It is strongly acid or medium acid.

The B2t horizon is yellowish red (5YR 4/6, 5/6, 5/8), brown (7.5YR 4/4), yellowish brown (10YR 5/4, 5/6), reddish yellow (7.5YR 6/6; 5YR 6/6), or strong brown (7.5YR 5/6, 5/8). It is loam, clay loam, or sandy clay loam. It ranges from medium acid to very strongly acid.

The B3 horizon is yellowish red (5YR 4/6, 5/6), strong brown (7.5YR 5/6, 5/8), pale brown (10YR 6/3), or yellowish brown (10YR 5/4, 5/6). It is a fine sandy loam or loam. It ranges from very strongly acid to medium acid.

3/3). It is dominantly clay but ranges to silty clay loam.

The underlying limestone bedrock consists of ledges that range from a few feet to several feet thick and have thin intervening layers of calcareous clayey shale.

Tenaha series

The Tenaha series consists of deep, well drained, moderately permeable soils that formed in loamy and sandy sediments. These very gently sloping to moderately steep soils are on forested uplands. Slopes range from 1 to 15 percent.

Tenaha soils are associated with Kirvin, Ruston, and Smithdale soils. Kirvin soils have more clay. Ruston and

brownish yellow (10YR 6/6). The A horizon is medium acid or strongly acid, but in limed areas it ranges to neutral.

The B2t horizon is yellowish red (5YR 5/6, 5/8) or red (2.5YR 4/6, 4/8) but ranges to strong brown (7.5YR 5/6) or reddish yellow (7.5YR 6/8). The lower part of the B2t horizon is mottled in shades of red, gray, or brown in some pedons. The B2t horizon is very strongly acid or strongly acid.

Trinity series

The Trinity series consists of deep, somewhat poorly drained, very slowly permeable soils that formed in

feet in winter and spring. The slope is dominantly less than 1 percent.

Tuscumbia soils are associated with Hopco, Kaufman, and Trinity soils. They have more clay and are grayer throughout than Hopco soils. Kaufman and Trinity soils have a thicker A horizon than Tuscumbia soils. In addition, Trinity soils are calcareous.

Typical pedon of Tuscumbia clay, 1,200 feet west and 2,300 feet south of the northeast corner sec. 29, T. 7 S., R. 18 E.

A1—0 to 8 inches; very dark gray (10YR 3/1) clay; strong fine granular structure; very firm; slightly acid; clear smooth boundary.

films on faces of peds; few fragments of shale and sandstone; medium acid; gradual wavy boundary.

B3—12 to 18 inches; coarsely mottled yellowish red (5YR 4/6) and gray (10YR 5/1) shaly silty clay; weak medium blocky structure; firm; thin discontinuous clay films on faces of peds; about 30 percent fragments of shale; medium acid; gradual wavy boundary.

Cr—18 to 30 inches; gray shale bedrock with a few fine layers of shaly clay; slightly acid; tilted 30 degrees from the horizontal.

The solum is 10 to 20 inches thick. It is 10 to 20 percent stones and gravel.

The A horizon is dark grayish brown (10YR 4/2) or dark brown (10YR 3/3). It is loam or silt loam. It is strongly acid to neutral.

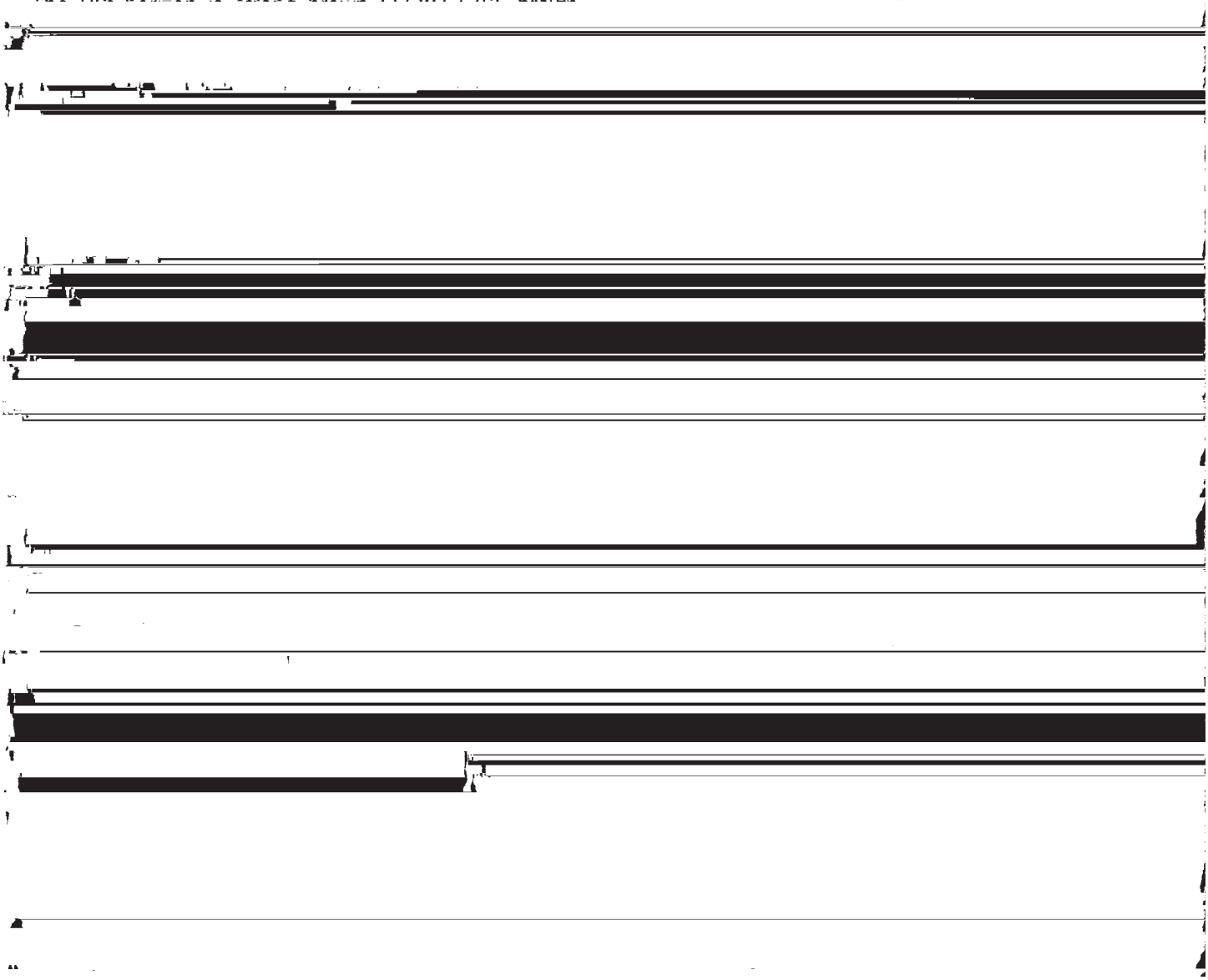
The B21t horizon is strong brown (7.5YR 5/6), brown

B21t—12 to 37 inches; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; firm; few fine pores; thick clay films on faces of some peds; few silt coatings on faces of some peds in the lower part; medium acid; gradual wavy boundary.

B22t&A'2—37 to 72 inches; red (2.5YR 4/6) sandy clay loam; weak fine subangular blocky structure; friable; many fine pores; thin discontinuous clay films on faces of some peds; common silt coatings on faces of many peds; about 25 percent pink (5YR 8/4) and white (10YR 8/1) streaks and tongues of loamy fine sand; A'2 tongues are 4 to 8 inches apart and 1/4 to 1 1/2 inches wide; medium acid.

Solum thickness is more than 60 inches.

The A1 horizon is brown (10YR 4/3; 7.5YR 4/4), dark brown (7.5YR 3/2), dark grayish brown (10YR 4/2), or



A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam; few fine faint dark brown mottles; weak fine granular structure; friable; strongly acid; clear smooth boundary.

A2g—4 to 12 inches; light brownish gray (10YR 6/2) silt loam; many medium distinct yellowish brown (10YR 5/4) mottles; weak medium granular structure; friable; few fine pores; strongly acid; abrupt irregular boundary; tongues into horizon below.

Bg&Ag—12 to 26 inches; gray (10YR 6/1) silty clay; many medium distinct yellowish brown mottles; moderate medium angular and subangular blocky structure; firm; common fine pores; clay films are continuous on faces of peds (Bg part); 15 percent tongues 1/4 to 1 1/2 inches wide of light gray (10YR 7/2) silt loam; silt coatings are common on faces of peds (Ag part); very strongly acid; gradual wavy boundary.

B2tg—26 to 56 inches; gray (10YR 5/1) silty clay, many coarse prominent light brownish gray (10YR 6/2) and yellowish brown (10YR 5/4) mottles; weak coarse blocky and moderate fine subangular blocky structure; firm; continuous clay films on faces of peds; thick light gray silt coatings on structural planes and filling fine voids; strongly acid; gradual wavy boundary.

B3g—56 to 70 inches; gray (10YR 5/1) silty clay, many medium distinct yellowish brown (10YR 5/6) mottles; weak coarse blocky structure; firm; few silt pockets or voids filled with light gray material; strongly acid.

(4) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus.

(5) United States Department of Agriculture. 1975. Soil taxonomy: a basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Ser., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

Glossary

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

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

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

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Solum thickness is 50 to 70 inches. Reaction in the A and B horizons ranges from very strongly acid to strongly acid.

The A1 horizon is grayish brown (10YR 5/2), dark grayish brown (10YR 4/2), or very dark grayish brown (10YR 3/2). The A2 horizon is light brownish gray (10YR

on land by streams.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material [illegible]

designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Calcareous soil. A soil containing enough calcium carbonate (commonly with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid. A soil having measurable amounts of calcium carbonate or magnesium carbonate.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more pre-

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A map unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Compressible. Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is

Deferred grazing. A delay in grazing until range plants reached a specified stage of growth. Grazing is

crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in

away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 37.5 centimeters) long.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as very brief if less than 2

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Green manure (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geo-

al is known to differ from that in the solum the Roman numeral II precedes the letter C.

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

Hummocky. Refers to a landscape of hillocks, separated by low sags, having sharply rounded tops and steep sides. Hummocky relief resembles rolling or undulating relief, but the tops of ridges are narrower

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt

Pan. A compact, dense layer in a soil. A pan impedes the movement of water and the growth of roots. The word "pan" is commonly combined with other words that more explicitly indicate the nature of the layer; for example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to

ite is one form of the material that has been called laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Range (or rangeland). Land that, for the most part,

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

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline-alkali soil. A soil that contains a harmful concentration of salts and exchangeable sodium; contains harmful salts and exchangeable sodium and is very strongly alkaline. The salts, exchangeable sodium, and alkaline reaction are in the soil in such location

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

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced

(0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

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

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons:

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or " very fine."

Thin layer. Otherwise suitable soil material too thin for

ILLUSTRATIONS

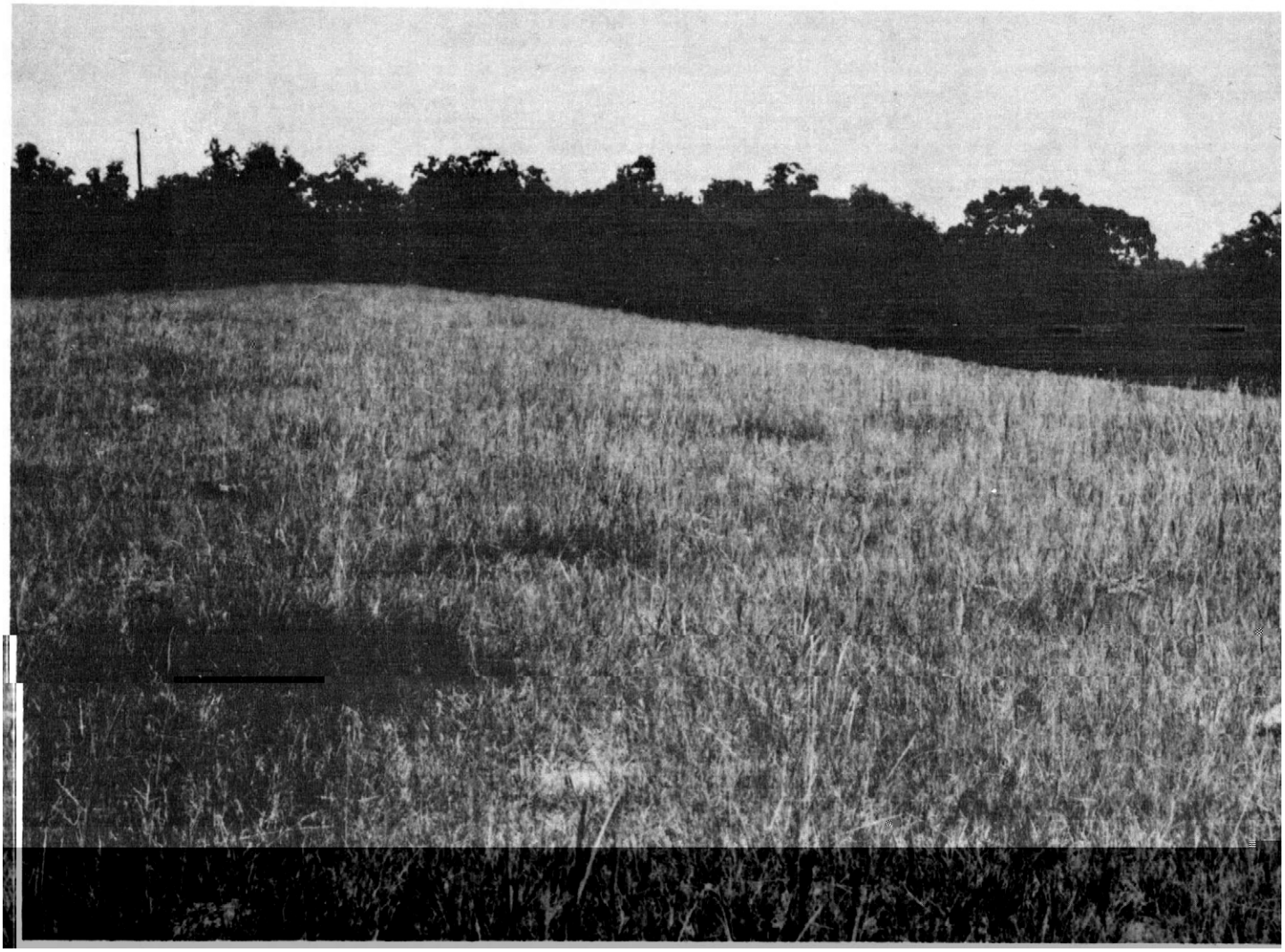


Figure 4.—Area of Ramsey fine sandy loam, 0 to 2 percent slopes. Bermudagrass is in the foreground and woodland in

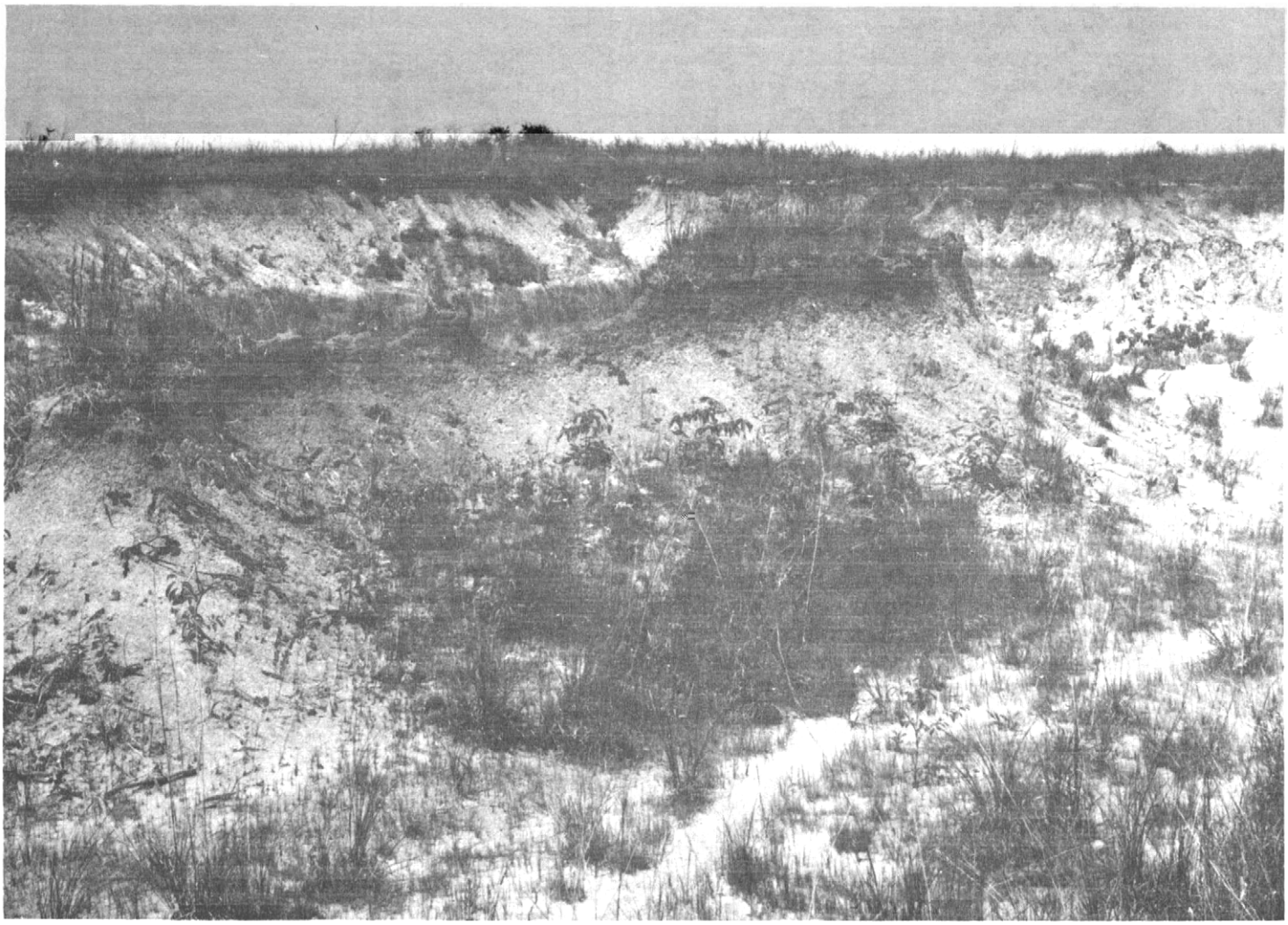


Figure 2.—Areas of Bernow, Bosville and Romia soils, 2 to 8 percent slopes, gullied. Unless protected, these soils are subject to gully erosion.

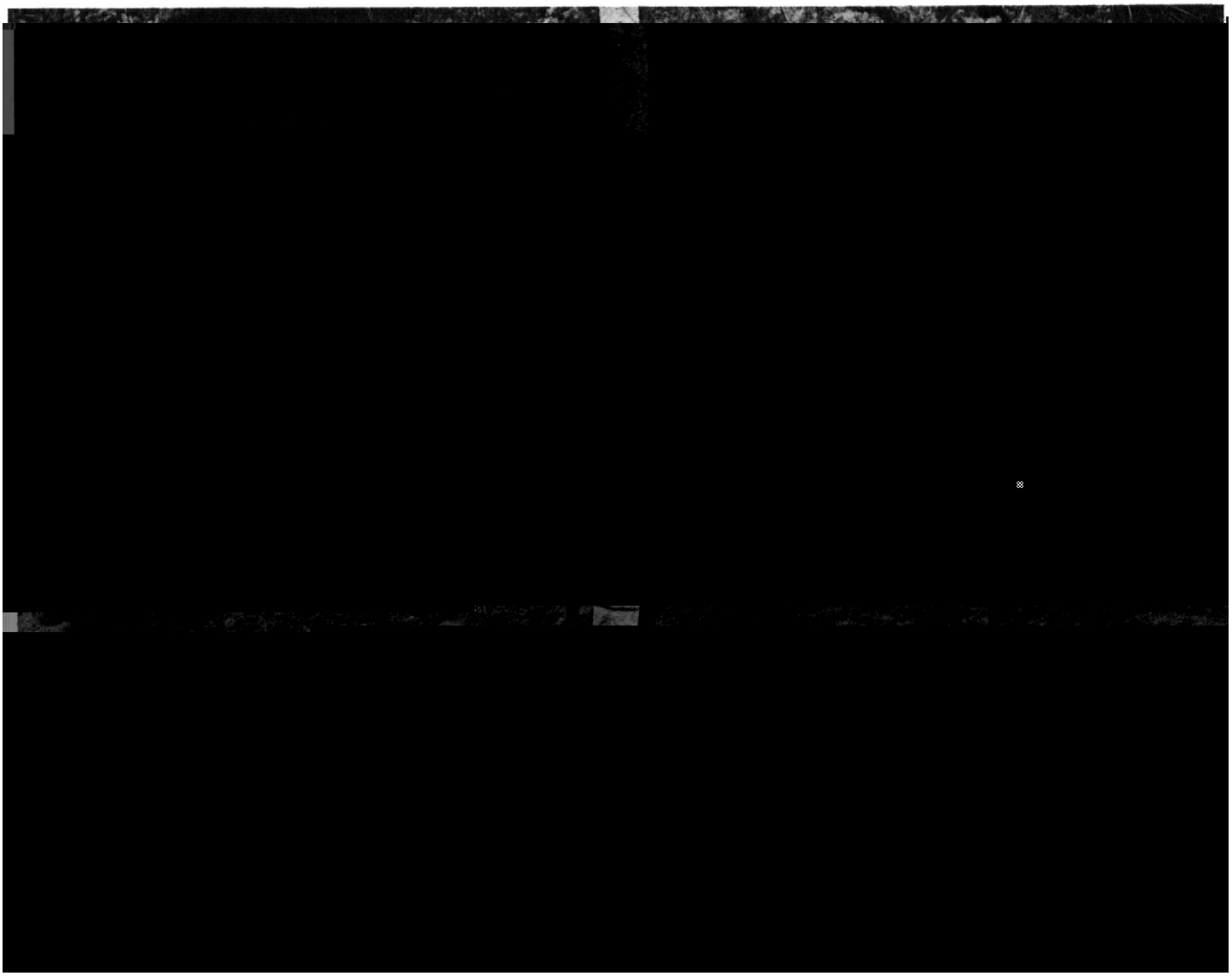


Figure 3.—Profile of Ruston fine sandy loam showing thin A1 and A2 horizons.

Figure 4.—A 4-year-old planting of loblolly pine on Ruston fine sandy loam, 1 to 3 percent slopes.

Figure 5.—Native grass in an area of Swink-Hollywood complex, 5 to 20 percent slopes. The soils are in the Shallow Prairie and Blackclay Prairie range sites.

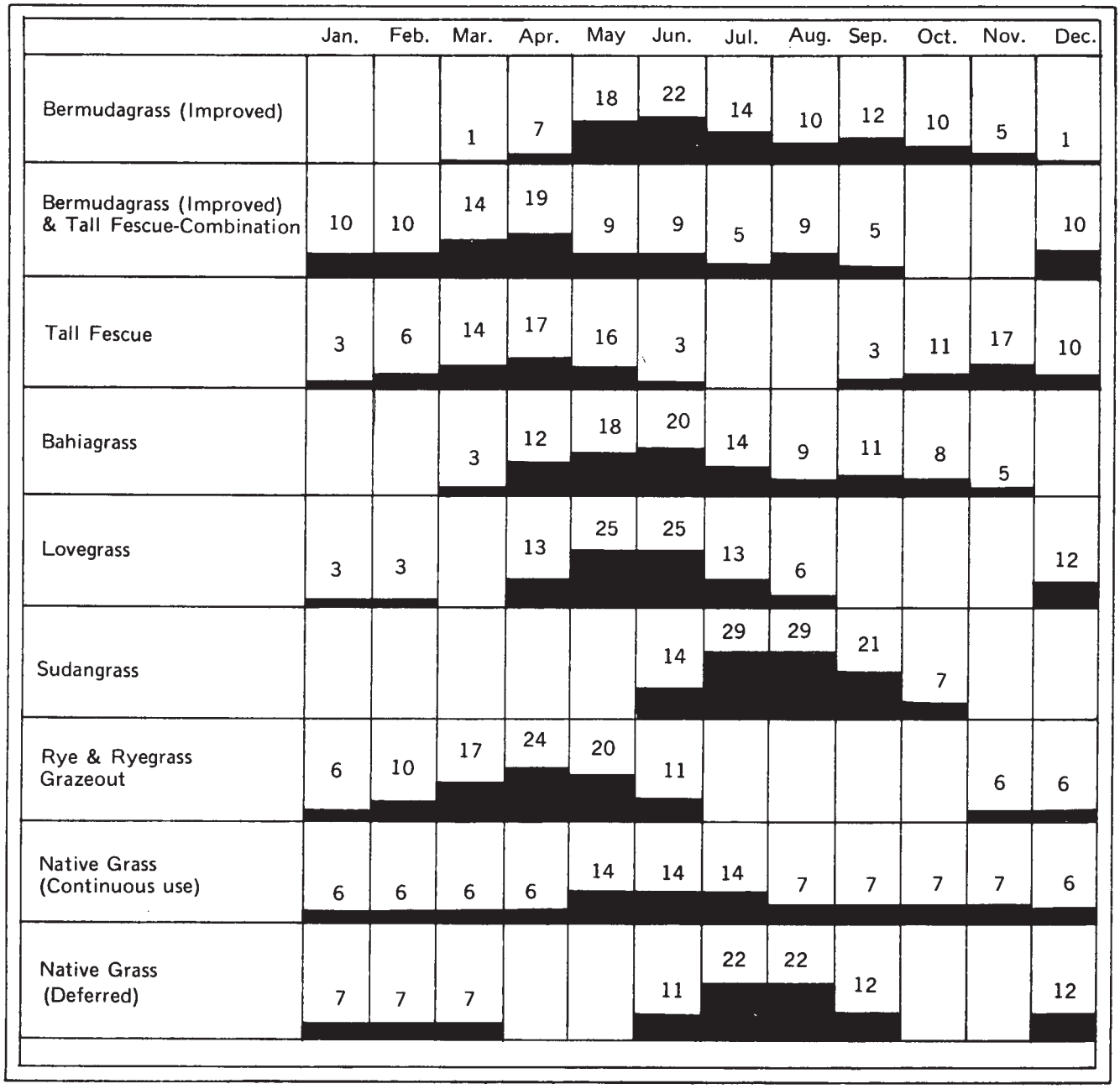


Figure 6.—Forage calendar showing monthly growth as a percentage of the forage produced annually.

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION

Month	Temperature[1]						Precipitation[1]				
	Average daily maximum	Average daily minimum	Average daily	10 will have-- Maximum temperature higher than--	10 will have-- Minimum temperature lower than--	Average number of growing degree days[2]	Average	will have-- Less than--	will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	53.6	29.2	41.4	78	5	21	2.16	.96	3.13	4	..6
February---	58.3	33.0	45.6	80	11	52	2.77	1.38	3.90	5	.7
March------	66.0	40.2	53.1	87	18	194	3.36	1.78	4.64	6	.1
April------	75.2	50.7	63.0	89	28	390	5.37	2.55	7.67	7	.0
May--------	81.8	58.1	70.0	93	39	620	5.99	3.11	8.34	7	.0
June-------	89.1	66.2	77.7	99	50	831	4.16	1.71	6.14	5	.0
July-------	94.3	69.6	82.0	104	57	992	3.43	.72	5.54	5	.0
August-----	94.2	68.0	81.1	105	55	964	3.52	1.44	5.20	5	.0
September--	87.0	61.7	74.4	101	42	732	5.72	2.47	8.42	6	.0
October----	77.8	50.3	64.1	93	30	437	4.22	1.15	6.68	4	.0
November---	65.2	39.0	52.1	84	17	129	3.23	1.35	4.75	4	.2
December---	56.1	31.9	44.0	77	10	40	3.11	1.19	4.65	5	.4

TABLE 2.--FREEZE DATES IN SPRING AND FALL

Probability	Temperature[1]		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 26	April 3	April 20
2 years in 10 later than--	March 19	March 29	April 15
5 years in 10 later than--	March 7	March 20	April 6
First freezing temperature in fall:			
1 year in 10 earlier than--	October 31	October 26	October 19
2 years in 10 earlier than--	November 8	October 30	October 23
5 years in 10 earlier than--	November 23	November 8	October 31

[1]Recorded in the period 1951-74 at Antlers, Okla.

TABLE 3.--GROWING SEASON

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	236	211	190
8 years in 10	244	218	196
5 years in 10	260	233	207
2 years in 10	276	247	219
1 year in 10	285	254	225

[1]Recorded in the period 1951-74 at Antlers, Okla.

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

Map symbol	Soil name	Acres	Percent
1	Alusa loam	4,934	1.0
2	Bernow fine sandy loam, 1 to 3 percent slopes	15,213	3.0
3	Bernow fine sandy loam, 3 to 6 percent slopes	7,442	1.5
4	Bernow-Romia complex, 6 to 12 percent slopes	19,891	3.9
5	Bernow-Romia complex, 2 to 8 percent slopes, eroded	9,739	1.9
6	Bernow, Bosville and Romia soils, 2 to 8 percent slopes, gullied	3,976	0.8
7	Boggy fine sandy loam	11,887	2.3
8	Bosville fine sandy loam, 1 to 4 percent slopes	12,427	2.4
9	Bosville fine sandy loam, 4 to 8 percent slopes	13,056	2.6
10	Bosville fine sandy loam, 3 to 8 percent slopes, eroded	3,288	0.6
11	Bosville fine sandy loam, 8 to 15 percent slopes	30,950	6.1
12	Burleson clay, 1 to 3 percent slopes	1,669	0.3
13	Caspiana silt loam	1,840	0.4
14	Clebit-Tuskahoma association, strongly sloping	3,079	0.6
15	Coushatta silty clay loam	1,559	0.3
16	Dela fine sandy loam	1,107	0.2
17	Durant silt loam, 1 to 3 percent slopes	9,918	1.9
18	Ferris clay, 3 to 5 percent slopes	781	0.2
19	Ferris clay, 2 to 5 percent slopes, eroded	7,461	1.5
20	Ferris clay, 5 to 12 percent slopes	1,299	0.3
21	Garton silty clay loam	1,802	0.4
22	Guyton silt loam	6,837	1.3
23	Heiden clay, 2 to 5 percent slopes	1,544	0.3
24	Hollywood silty clay, 1 to 3 percent slopes	11,600	2.3
25	Hollywood silty clay, 3 to 5 percent slopes	4,823	0.9
26	Hollywood-Swink complex, 2 to 8 percent slopes	23,308	4.6
27	Hopco silty clay loam	17,209	3.4
28	Idabel silt loam	3,846	0.8
29	Karma fine sandy loam, 0 to 1 percent slopes	3,445	0.7
30	Kaufman clay	1,547	0.3
31	Kaufman clay, depressional	5,157	1.0
32	Kiomatia loamy fine sand	2,390	0.5
33	Larue loamy fine sand, 2 to 5 percent slopes	6,358	1.2
34	Latanier clay	1,528	0.3
35	Lula silt loam, 1 to 3 percent slopes	1,785	0.4
36	Muskogee silt loam, 1 to 3 percent slopes	35,869	7.1
37	Newtonia silt loam, 1 to 3 percent slopes	7,162	1.4
38	Oklared very fine sandy loam	2,129	0.4
39	Panola silt loam, 0 to 2 percent slopes	10,180	2.0
40	Pledger clay	4,775	0.9
41	Redlake clay	2,345	0.5
42	Roebuck clay	7,125	1.4
43	Ruston fine sandy loam, 1 to 3 percent slopes	5,656	1.1
44	Ruston fine sandy loam, 3 to 5 percent slopes	3,649	0.7
45	Saffell gravelly fine sandy loam, 3 to 8 percent slopes	727	0.1
46	Severn very fine sandy loam	3,051	0.6
47	Smithdale fine sandy loam, 5 to 12 percent slopes	6,717	1.3
48	Smithdale fine sandy loam, 2 to 8 percent slopes, eroded	3,624	0.7
49	Speer fine sandy loam	4,043	0.8
50	Swink-Hollywood complex, 5 to 20 percent slopes	30,007	5.9
51	Tenaha loamy fine sand, 1 to 5 percent slopes	12,555	2.5
52	Tenaha loamy fine sand, 5 to 8 percent slopes	8,729	1.7
53	Tenaha-Kirvin association, moderately steep	36,881	7.2
54	Tenaha and Smithdale soils, 2 to 12 percent slopes, gullied	5,206	1.0
55	Trinity clay	11,523	2.3
56	Tuscumbia clay	2,178	0.4
57	Udorthents	1,439	0.3
58	Whakana very fine sandy loam, 1 to 4 percent slopes	986	0.2

TABLE 5.--YIELDS PER ACRE OF PASTURE

[redacted]

the pasture grass is seldom grown or is not suited]

Soil name and map symbol	Bermudagrass improved	Bermudagrass improved and tall fescue combination	Tall fescue	Bahiagrass	Weeping lovegrass	Sudangrass	Rye and ryegrass grazeout
	AUM*	AUM	AUM	AUM	AUM	AUM	AUM
1---------- Alusa	5.5	5.5	5.5	5.0	---	---	---
2---------- Bernow	7.5	---	---	6.5	7.5	3.5	4.5
3---------- Bernow	7.0	---	---	6.0	7.0	3.0	4.0
4**---------- Bernow	5.0	---	---	4.5	5.0	---	4.0
5**---------- Bernow	5.0	---	---	4.5	5.0	---	---
6**---------- Bernow	4.5	---	---	4.0	4.0	---	---
7---------- Boggy	12.0	11.5	11.0	---	---	---	---

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

Soil name and map symbol	Bermudagrass improved	Bermudagrass improved and tall fescue combination	Tall fescue	Bahiagrass	Weeping lovegrass	Sudangrass	Rye and ryegrass grazeout
	AUM*	AUM	AUM	AUM	AUM	AUM	AUM
22---- Guyton	6.5	7.0	7.5	6.0	---	---	4.0
23---- Heiden	6.0	5.5	4.5	5.0	---	3.5	3.5
24---- Hollywood	5.5	5.5	5.0	5.0	---	3.5	4.0
25---- Hollywood	5.0	5.0	4.5	4.5	---	3.5	3.5
26**---- Hollywood	5.5	---	---	5.5	---	---	---
27---- Hopco	9.0	9.0	9.0	---	---	4.0	5.5
28---- Idabel	8.5	8.0	7.5	7.0	8.5	4.0	5.5
29---- Karma	8.0	7.0	6.5	7.0	8.5	4.0	4.5
30---- Kaufman	7.5	7.0	6.5	6.5	---	3.5	4.0
31---- Kaufman	7.0	7.0	7.0	---	---	---	---
32---- Kiomatia	6.5	---	---	6.5	7.0	3.0	4.5
33---- Larue	6.0	---	---	6.0	6.5	4.0	4.5
34---- Latanier	7.0	7.0	7.0	6.0	---	3.0	3.5
35---- Lula	6.5	5.5	4.0	5.5	---	3.0	3.5
36---- Muskogee	7.0	6.5	6.0	---	7.5	3.5	4.0
37---- Newtonia	7.5	6.0	4.5	6.5	---	3.0	3.5
38---- Oklared	7.5	6.5	5.5	7.0	7.5	4.0	4.5
39---- Panola	6.0	6.0	6.0	5.0	---	3.0	3.5
40---- Pledger	7.5	7.5	7.5	---	---	3.5	4.0
41---- Redlake	7.0	7.0	7.0	---	---	3.0	3.5
42---- Roebuck	7.0	7.0	7.0	---	---	3.0	3.5
43---- Ruston	8.0	---	---	8.0	7.5	4.0	4.5
44---- Ruston	7.5	---	---	5.5	7.5	3.5	4.0

See footnotes at end of table.

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

Soil name and map symbol	Bermudagrass improved	Bermudagrass improved and tall fescue combination	Tall fescue	Bahiagrass	Weeping lovegrass	Sudangrass	Rye and ryegrass grazeout
	AUM*	AUM	AUM	AUM	AUM	AUM	AUM
45---- Saffell	5.5	---	---	5.5	5.5	---	---
46---- Severn	8.5	8.0	7.5	---	9.0	4.0	5.5
47---- Smithdale	5.5	---	---	5.0	5.5	---	---
48---- Smithdale	5.5	---	---	5.0	5.5	---	---
49---- Speer	8.0	6.0	5.0	7.0	8.0	4.0	4.5
50**---- Swink	---	---	---	---	---	---	---
51---- Tenaha	7.0	---	---	7.0	7.5	---	---
52---- Tenaha	6.0	---	---	6.0	6.5	---	---
53**:							
Tenaha----	6.0	---	---	6.0	6.5	---	---
Kirvin----	6.5	---	---	6.0	6.5	---	---
54**---- Tenaha	5.0	---	---	5.0	5.5	---	---
55---- Trinity	7.5	7.5	7.5	6.5	---	4.0	4.0
56---- Tuscumbia	7.5	7.0	6.5	6.5	---	4.0	4.0
57---- Udorthents	---	---	---	---	---	---	---
58---- Whakana	7.0	---	---	6.0	---	3.0	3.5
59---- Whakana	7.0	---	---	6.0	---	3.0	3.5
60**---- Wrightsville	7.5	7.0	7.0	7.0	---	3.0	4.0

*An animal-unit-month is the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for a period of 30 days.

**This map unit is made up of two or more dominant kinds of soil. See map unit description for the behavior characteristics and composition of the map unit.

TABLE 6.--YIELDS PER ACRE OF CROPS

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

Soil name and map symbol	Wheat	Grain sorghum	Soybeans	Peanuts	Cotton lint	Alfalfa hay
	Bu	Bu	Bu	Lb	Lb	Ton
1---------- Alusa	25	30	20	---	---	---
2---------- Bernow	30	55	30	1,400	550	---
3---------- Bernow	25	50	20	1,300	450	---
4---------- Bernow	---	---	---	---	---	---
5---------- Bernow	20	---	---	---	---	---
6---------- Bernow	---	---	---	---	---	---
7---------- Boggy	---	---	---	---	---	---
8---------- Bosville	25	55	30	1,450	---	---
9, 10---------- Bosville	20	---	---	---	---	---
11---------- Bosville	---	---	---	---	---	---
12---------- Burleson	30	60	25	---	450	---
13---------- Caspiana	45	70	40	1,850	875	4.0
14*:						
Clebit----------	---	---	---	---	---	---
Tuskahoma----------	---	---	---	---	---	---
15---------- Coushatta	40	65	40	---	850	3.5
16---------- Dela	30	60	30	1,500	500	3.5
17---------- Durant	35	50	28	1,200	400	---
18---------- Ferris	25	45	---	---	300	---
19---------- Ferris	25	35	---	---	250	---
20---------- Ferris	---	---	---	---	---	---
21---------- Garton	40	65	35	---	700	5.0

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS--Continued

Soil name and map symbol	Wheat	Grain sorghum	Soybeans	Peanuts	Cotton lint	Alfalfa hay
	Bu	Bu	Bu	Lb	Lb	Ton
22--Guyton	25	40	20	---	---	---
23--Heiden	30	55	---	---	350	---
24--Hollywood	30	55	---	---	---	---
25--Hollywood	30	55	---	---	---	---
26--Hollywood	---	---	---	---	---	---
27-	30	55	---	---	550	---

TABLE 6.--YIELDS PER ACRE OF CROPS--Continued

Soil name and map symbol	Wheat	Grain sorghum	Soybeans	Peanuts	Cotton lint	Alfalfa hay
	Bu	Bu	Bu	Lb	Lb	Ton
45--- Saffell	30	---	---	---	---	---
46**--- Severn	45	75	40	2,000	800	5.5
47--- Smithdale	20	35	20	1,100	---	---
48--- Smithdale	20	35	25	1,000	---	---
49--- Speer	30	65	25	1,400	550	---
50--- Swink	---	---	---	---	---	---
51--- Tenaha	20	30	---	1,100	---	---
52--- Tenaha	20	30	---	1,000	---	---
53*:						
Tenaha---	---	---	---	---	---	---
Kirvin---	---	---	---	---	---	---
54--- Tenaha	---	---	---	---	---	---
55--- Trinity	---	---	---	---	---	---
56--- Tuscumbia	30	60	30	---	500	5.0
57*. Udorthents						
58--- Whakana	30	60	30	---	400	---
59--- Whakana	25	55	30	---	350	---
60--- Wrightsville	25	35	25	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.
** Yields are for areas protected from flooding.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

[Only the soils that support rangeland vegetation suitable for grazing are listed]

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
2, 3---------- Bernow	Sandy Savannah----------	Favorable Normal Unfavorable	4,200 3,000 2,200	Little bluestem---------- Big bluestem---------- Indiangrass---------- Switchgrass----------	25 15 10 5
4*, 5*: Bernow----------	Sandy Savannah----------	Favorable Normal Unfavorable	4,200 3,000 2,200	Little bluestem---------- Big bluestem---------- Indiangrass---------- Switchgrass----------	25 15 10 5
Romia----------	Sandy Savannah----------	Favorable Normal Unfavorable	4,200 3,000 2,200	Little bluestem---------- Big bluestem---------- Indiangrass---------- Switchgrass----------	25 20 5 5
6*: Bernow----------	Eroded Sandy Savannah---------	Favorable Normal Unfavorable	2,800 2,100 1,600	Little bluestem---------- Indiangrass----------	30 20
Bosville----------	Eroded Sandy Savannah---------	Favorable	2,800	Little bluestem----------	25

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
18, 19, 20--------- Ferris	Blackclay Prairie----------	Favorable Normal Unfavorable	7,000 5,500 4,000	Little bluestem---------- Indiangrass---------- Big bluestem---------- Switchgrass---------- Florida paspalum---------- Eastern gamagrass---------- Virginia wildrye---------- Sideoats grama---------- Meadow dropseed----------	30 15 15 5 5 5 5 5 5
23---------- Heiden	Blackclay Prairie----------	Favorable Normal Unfavorable	7,000 6,000 3,500	Little bluestem---------- Big bluestem---------- Indiangrass----------	50 15 10
24, 25---------- Hollywood	Blackclay Prairie----------	Favorable Normal Unfavorable	7,000 4,900 3,500	Little bluestem---------- Indiangrass---------- Big bluestem---------- Sideoats grama---------- Silver bluestem---------- Tall dropseed----------	40 15 15 5 5 5
26*: Hollywood---------	Blackclay Prairie----------	Favorable Normal Unfavorable	7,000 4,900 3,500	Little bluestem---------- Indiangrass---------- Big bluestem---------- Sideoats grama---------- Silver bluestem---------- Tall dropseed----------	40 15 15 5 5 5
Swink----------	Shallow Prairie----------	Favorable Normal Unfavorable	3,600 2,500 1,800	Little bluestem---------- Big bluestem---------- Indiangrass---------- Switchgrass---------- Tall dropseed---------- Scribner panicum---------- Sideoats grama----------	30 15 10 10 5 5 5
33---------- Larue	Deep Sand Savannah----------	Favorable Normal Unfavorable	4,500 3,000 2,000	Little bluestem---------- Indiangrass---------- Longleaf uniola---------- Switchgrass---------- Brownseed paspalum----------	20 10 10 10 5
35---------- Lula	Loamy Prairie----------	Favorable Normal Unfavorable	7,000 5,500 4,500	Big bluestem---------- Switchgrass---------- Little bluestem---------- Indiangrass---------- Scribner panicum---------- Purpletop---------- Tall dropseed---------- Catclaw sensitivebrier--------- Goldenrod----------	35 15 10 10 5 5 5 5 5
37---------- Newtonia	Loamy Prairie----------	Favorable Normal Unfavorable	7,000 4,500 3,200	Big bluestem---------- Indiangrass---------- Little bluestem---------- Switchgrass---------- Scribner panicum----------	35 15 10 10 5
39---------- Panola	Loamy Prairie----------	Favorable Normal Unfavorable	6,500 4,700 3,500	Big bluestem---------- Little bluestem---------- Eastern gamagrass---------- Indiangrass---------- Switchgrass----------	25 20 20 15 10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
50*:					
Swink	Shallow Prairie	Favorable	3,600	Little bluestem	30
		Normal	2,500	Big bluestem	15
		Unfavorable	1,800	Indiangrass	10
				Switchgrass	10
				Tall dropseed	5
				Scribner panicum	5
				Sideoats grama	5
Hollywood	Blackclay Prairie	Favorable	7,000	Little bluestem	40
		Normal	4,900	Indiangrass	15
		Unfavorable	3,500	Big bluestem	15
				Sideoats grama	5
				Silver bluestem	5
				Tall dropseed	5

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

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
1---------- Alusa	3w	Slight	Severe	Severe	Water oak---------- Sweetgum----------	80 ---	Loblolly pine.
2, 3---------- Bernow	4o	Slight	Slight	Slight	Southern red oak----	60	Loblolly pine, shortleaf pine.
4*, 5*: Bernow----------	4o	Slight	Slight	Slight	Southern red oak----	60	Loblolly pine, shortleaf pine.
Romia----------	4o	Slight	Slight	Slight	Southern red oak----	60	Shortleaf pine, loblolly pine.
6*: Bernow----------	5c	Severe	Moderate	Moderate	Southern red oak----	50	Loblolly pine, shortleaf pine.
Bosville----------	5c	Severe	Moderate	Moderate	Southern red oak----	50	Shortleaf pine, loblolly pine.
Romia----------	5c	Severe	Moderate	Moderate	Southern red oak----	50	Shortleaf pine, loblolly pine.
7---------- Boggy	2w	Slight	Moderate	Slight	Shortleaf pine------ Southern red oak---- Sweetgum---------- Red maple----------	80 80 90 ---	Loblolly pine, sweetgum, shortleaf pine.
8, 9, 10, 11------- Bosville	4c	Slight	Moderate	Moderate	Southern red oak---- Black oak----------	60 60	Shortleaf pine, loblolly pine.
13---------- Caspiana	2o	Slight	Slight	Slight	Green ash---------- Eastern cottonwood-- Pecan---------- Sweetgum---------- American sycamore---	75 105 --- 90 ---	Eastern cottonwood, sweetgum, American sycamore.
14*: Clebit----------	5x	Moderate	Moderate	Moderate	Shortleaf pine------ Eastern redcedar----	40 30	Shortleaf pine, eastern redcedar.
Tuskahoma---------	5d	Moderate	Moderate	Moderate	Shortleaf pine------ Eastern redcedar----	50 30	Shortleaf pine, eastern redcedar.
15---------- Coushatta	2o	Slight	Slight	Slight	Eastern cottonwood-- Pecan---------- Sweetgum---------- American sycamore--- Cherrybark oak------ Water oak----------	100 --- 90 --- --- ---	Eastern cottonwood, American sycamore.
16---------- Dela	2o	Slight	Slight	Slight	Southern red oak---- Sweetgum---------- Eastern cottonwood-- Shortleaf pine------	80 90 100 80	Loblolly pine, shortleaf pine, black walnut, southern red oak.
21---------- Garton	2o	Slight	Slight	Slight	Eastern cottonwood-- American sycamore--- Sweetgum---------- Black walnut-------- Common hackberry---- Pecan----------	100 --- --- --- --- ---	Eastern cottonwood, American sycamore, sweetgum, black walnut, green ash, pecan.

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
22---------- Guyton	2w	Slight	Severe	Moderate	Sweetgum---------- Green ash---------- Southern red oak---- Water oak----------	90 --- --- ---	Loblolly pine, sweetgum.
27---------- Hopco	2w	Slight	Moderate	Slight	Pecan---------- Eastern cottonwood-- Water oak---------- Willow oak----------	--- 100 90 ---	Eastern cottonwood, water oak, green ash.
28---------- Idabel	2o	Slight	Slight	Slight	Eastern cottonwood-- Pecan---------- Common hackberry----	100 75 75	Eastern cottonwood, pecan, American sycamore, black walnut, sweetgum.
29---------- Karma	3o	Slight	Slight	Slight	Eastern cottonwood-- Pecan---------- Green ash---------- Black walnut--------	90 --- --- ---	Eastern cottonwood, black walnut, Shumard oak, pecan, green ash, American sycamore.
30, 31---------- Kaufman	2w	Slight	Moderate	Moderate	Eastern cottonwood-- Sweetgum---------- Water oak---------- Green ash----------	100 90 --- ---	Eastern cottonwood, green ash, pecan, sweetgum.
32---------- Kiomatia	2w	Slight	Moderate	Moderate	Eastern cottonwood-- Sweetgum----------	100 95	Eastern cottonwood, sweetgum, black walnut, American sycamore.
33---------- Larue	4s	Slight	Moderate	Moderate	Shortleaf pine------ Southern red oak---- Sweetgum----------	70 --- ---	Loblolly pine, shortleaf pine.
34---------- Latanier	2w	Slight	Moderate	Moderate	Green ash---------- Water oak---------- Pecan---------- Sweetgum---------- Eastern cottonwood-- American sycamore---	80 90 --- 90 100 ---	Eastern cottonwood, American sycamore.
36---------- Muskogee	3o	Slight	Slight	Slight	Shortleaf pine------ Sweetgum---------- Southern red oak----	70 80 ---	Loblolly pine, shortleaf pine, Shumard oak, sweetgum.
38---------- Oklared	2o	Slight	Slight	Slight	Eastern cottonwood-- Pecan---------- Common hackberry----	100 75 75	Eastern cottonwood, American sycamore, pecan, black walnut,
40---------- Pledger	3c	Slight	Moderate	Severe	Pecan---------- Eastern cottonwood-- Green ash----------	--- 90 ---	Pecan, eastern cottonwood.
41---------- Redlake	3w	Slight	Severe	Moderate	Eastern cottonwood-- Pecan---------- Black walnut-------- Green ash----------	90 --- --- ---	Eastern cottonwood, pecan, American sycamore, green ash.
42---------- Roebuck	3w	Slight	Moderate	Moderate	Eastern cottonwood-- Green ash---------- Pecan----------	90 --- ---	Eastern cottonwood, green ash, pecan, bur oak.

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
43, 44--Ruston	3o	Slight	Slight	Slight	Shortleaf pine	75	Loblolly pine.
45--Saffell	4f	Slight	Slight	Moderate	Shortleaf pine Eastern redcedar	60 ---	Loblolly pine, shortleaf pine, eastern redcedar.
46--Severn	2o	Slight	Slight	Slight	Eastern cottonwood Pecan Common hackberry	100 76 76	Eastern cottonwood, American sycamore, pecan, black walnut, sweetgum.
47, 48--Smithdale	3o	Slight	Slight	Slight	Shortleaf pine	69	Loblolly pine.
49--Speer	2o	Slight	Slight	Slight	Southern red oak Sweetgum Shortleaf pine	80 90 80	Loblolly pine, shortleaf pine, black walnut, southern red oak.
51, 52--Tenaha	3s	Slight	Slight	Moderate	Shortleaf pine	70	Shortleaf pine, loblolly pine.
53*: Tenaha	3s	Slight	Slight	Moderate	Shortleaf pine	70	Shortleaf pine, loblolly pine.
Kirvin	3o	Slight	Slight	Slight	Shortleaf pine	70	Loblolly pine, shortleaf pine.
54*: Tenaha.							
Smithdale	3o	Slight	Slight	Slight	Shortleaf pine	69	Loblolly pine.
55--Trinity	2w	Slight	Severe	Moderate	Eastern cottonwood Pin oak Green ash	100 --- ---	Eastern cottonwood, green ash.
56--Tuscumbia	2w	Slight	Moderate	Severe	Eastern cottonwood Green ash Sweetgum	100 95 85	Eastern cottonwood, green ash, sweetgum.
58, 59--Whakana	3o	Slight	Slight	Slight	Shortleaf pine Sweetgum Southern red oak	70 80 70	Loblolly pine, sweetgum, southern red oak.
60*: Wrightsville	3w	Slight	Severe	Moderate	Sweetgum Water oak	80 80	Loblolly pine, sweetgum, water oak, willow oak.
Elysian	2o	Slight	Slight	Slight	Shortleaf pine Sweetgum Southern red oak	80 --- ---	Loblolly pine, sweetgum, cherrybark oak, black walnut,

TABLE 9.--WOODLAND UNDERSTORY VEGETATION

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

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
1---------- Alusa	Favorable	1,300	Panicum	15
	Normal	1,000	Sedge	15
	Unfavorable	600	Broadleaf uniola	10
			Little bluestem	5
2, 3---------- Bernow	Favorable	2,100	Little bluestem	15
	Normal	1,500	Big bluestem	10
	Unfavorable	1,100	Indiangrass	5
			Switchgrass	5
4*, 5*:				
Bernow----------	Favorable	2,100	Little bluestem	15
	Normal	1,500	Big bluestem	10
	Unfavorable	1,100	Indiangrass	5
			Switchgrass	5
Romi a----------	Favorable	2,100	Little bluestem	15
	Normal	1,500	Big bluestem	10
	Unfavorable	1,100	Indiangrass	5
			Switchgrass	5
6*:				
Bernow----------	Favorable	1,600	Little bluestem	25
	Normal	1,200	Indiangrass	5
	Unfavorable	900	Switchgrass	5
Bosville----------	Favorable	1,600	Little bluestem	25
	Normal	1,200	Indiangrass	5
	Unfavorable	900	Switchgrass	5
Romi a----------	Favorable	1,600	Little bluestem	25
	Normal	1,200	Indiangrass	5
	Unfavorable	900	Switchgrass	5
7---------- Boggy	Favorable	3,000	Little bluestem	10
	Normal	2,100	Wildrye	10
	Unfavorable	1,600	Uniola	10
			Giant cane	10
			Switchgrass	5
			Sedge	5
8, 9, 10, 11------- Bosville	Favorable	2,300	Little bluestem	15
	Normal	1,700	Big bluestem	10
	Unfavorable	1,300	Indiangrass	5
			Switchgrass	5
13----------	Favorable	4,500	Big bluestem	20
	Normal	3,000	Indiangrass	20

[redacted]

TABLE 9.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
15---------- Coushatta	Favorable	4,300	Little bluestem----------	15
	Normal	3,000	Big bluestem----------	10
	Unfavorable	2,000	Canada wildrye----------	10
16---------- Dela	Favorable	4,000	Big bluestem----------	5
	Normal	3,100	Little bluestem----------	15
	Unfavorable	2,500	Panicum----------	10
21---------- Garton	Favorable	2,800	Canada wildrye----------	15
	Normal	1,800	Sedge----------	10
	Unfavorable	1,200	Beaked panicum----------	10
			Little bluestem----------	10
			Broadleaf uniola----------	10
22---------- Guyton	Favorable	2,400	Little bluestem----------	20
	Normal	1,800	Virginia wildrye----------	10
	Unfavorable	1,400	Broadleaf uniola----------	10
27---------- Hopco	Favorable	4,500	Longleaf uniola----------	15
	Normal	3,000	Virginia wildrye----------	10
	Unfavorable	2,000	Beaked panicum----------	10
			Little bluestem----------	10
			Sedge----------	10
			Giant cane----------	5
28---------- Idabel	Favorable	4,500	Little bluestem----------	15
	Normal	3,000	Wildrye----------	10
	Unfavorable	2,000	Uniola----------	10
			Giant cane----------	10
			Switchgrass----------	5
29---------- Karma	Favorable	2,800	Big bluestem----------	25
	Normal	2,000	Indiangrass----------	15
	Unfavorable	1,500	Little bluestem----------	10
			Switchgrass----------	5
			Beaked panicum----------	5
30---------- Kaufman	Favorable	2,700	Little bluestem----------	10
	Normal	2,000	Wildrye----------	15
	Unfavorable	1,500	Sedge----------	15
31---------- Kaufman	Favorable	2,400	Sedge----------	20
	Normal	1,600	Longleaf uniola----------	10
	Unfavorable	1,000	Wildrye----------	10
32---------- Kiomatia	Favorable	5,000	Beaked panicum----------	20
	Normal	4,000	Giant cane----------	20
	Unfavorable	2,500	Sedge----------	10
			Virginia wildrye----------	10
			Longleaf uniola----------	5
33---------- Larue	Favorable	3,000	Little bluestem----------	20
	Normal	2,500	Indiangrass----------	10
	Unfavorable	2,000	Longleaf uniola----------	10
			Switchgrass----------	10
			Purpletop----------	5
			Purple lovegrass----------	5
34---------- Latanier	Favorable	3,000	Switchgrass----------	10
	Normal	2,100	Indiangrass----------	5
	Unfavorable	1,500	Prairie cordgrass----------	20

See footnote at end of table.

TABLE 9.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
36---------- Muskogee	Favorable	2,500	Beaked panicum----------	12
	Normal	1,700	Lespedeza----------	10
	Unfavorable	1,000	Virginia wildrye----------	8
			Panicum----------	5
			Sedge----------	5
38---------- Oklared	Favorable	4,300	Little bluestem----------	15
	Normal	3,000	Canada wildrye----------	10
	Unfavorable	2,000	Broadleaf uniola----------	10
			Giant cane----------	10
			Switchgrass----------	5
			Big bluestem----------	5
			Beaked panicum----------	5
			Sedge----------	5
40---------- Pledger	Favorable	3,000	Virginia wildrye----------	20
	Normal	2,100	Panicum----------	20
	Unfavorable	1,500	Sedge----------	15
			Eastern gamagrass----------	10
			Switchgrass----------	5
			Longleaf uniola----------	5
			Giant cane----------	5
			Little bluestem----------	5
41---------- Redlake	Favorable	3,200	Giant cane----------	15
	Normal	2,400	Canada wildrye----------	10
	Unfavorable	1,800	Sedge----------	10
			Switchgrass----------	10
			Indiangrass----------	10
			Broadleaf uniola----------	5
			Eastern gamagrass----------	5
42---------- Roebuck	Favorable	3,000	Sedge----------	15
	Normal	2,100	Switchgrass----------	10
	Unfavorable	1,500	Big bluestem----------	10
			Scribner panicum----------	10
43, 44---------- Ruston	Favorable	1,800	Longleaf uniola----------	50
	Normal	1,200	Little bluestem----------	15
	Unfavorable	900	Beaked panicum----------	10
			Panicum----------	10
45---------- Saffell	Favorable	1,500	Bluestem----------	20
	Normal	1,000	Uniola----------	15
	Unfavorable	500	Virginia wildrye----------	10
			Beaked panicum----------	10
			Indiangrass----------	5
			Panicum----------	5
			Sedge----------	5
46---------- Severn	Favorable	4,500	Little bluestem----------	15
	Normal	3,000	Big bluestem----------	10
	Unfavorable	2,000	Canada wildrye----------	10
			Panicum----------	10
			Indiangrass----------	5
			Switchgrass----------	5
			Sedge----------	5
			Scribner panicum----------	5
47, 48---------- Smithdale	Favorable	1,700	Longleaf uniola----------	15
	Normal	1,200	Little bluestem----------	17
	Unfavorable	700	Beaked panicum----------	12
			Panicum----------	12

See footnote at end of table.

TABLE 9.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
49---------- Speer	Favorable	4,000	Little bluestem----------	15
	Normal	3,100	Sedge----------	10
	Unfavorable	2,500	Panicum----------	10
			Big bluestem----------	5
			Indiangrass----------	5
			Post oak----------	5
			Southern red oak----------	5
			Shortleaf pine----------	5
			White oak----------	5
			Sweetgum----------	5
51, 52---------- Tenaha	Favorable	2,500	Little bluestem----------	20
	Normal	2,000	Big bluestem----------	15
	Unfavorable	1,250	Longleaf uniola----------	15
			Switchgrass----------	10
			Indiangrass----------	5
			Purpletop----------	5
53*:				
Tenaha----------	Favorable	2,500	Little bluestem----------	20
	Normal	2,000	Big bluestem----------	15
	Unfavorable	1,250	Longleaf uniola----------	15
			Switchgrass----------	10
			Indiangrass----------	5
			Purpletop----------	5
Kirvin----------	Favorable	2,500	Longleaf uniola----------	15
	Normal	1,750	Pinehill bluestem----------	10
	Unfavorable	1,250	Beaked panicum----------	10
			Purpletop----------	10
			Giant cane----------	10
			Brownseed paspalum----------	10
			Big bluestem----------	5
			Indiangrass----------	5
54*:				
Tenaha----------	Favorable	2,000	Little bluestem----------	15
	Normal	1,400	Longleaf uniola----------	10
	Unfavorable	1,000	Muhly----------	10
Smithdale---------	Favorable	1,500	Longleaf uniola----------	30
	Normal	1,200	Little bluestem----------	17
	Unfavorable	700	Beaked panicum----------	12
			Panicum----------	12
55---------- Trinity	Favorable	2,700	Virginia wildrye----------	15
	Normal	2,000	Sedge----------	15
	Unfavorable	1,500	Eastern gamagrass----------	10
			Switchgrass----------	10
			Indiangrass----------	10
			Giant cane----------	5
			Beaked panicum----------	5
			Panicum----------	5
56----------	Favorable	3,000	Virginia wildrye----------	20
	Normal	2,100	Panicum----------	20
	Unfavorable	1,500	Sedge----------	15
58, 59---------- Whakana	Favorable	2,500	Longleaf uniola----------	20
	Normal	1,900	Little bluestem----------	10
	Unfavorable	1,500	Panicum----------	10
			Beaked panicum----------	5
			Purpletop----------	5
			Gayfeather----------	5
			Sedge----------	5

See footnote at end of table.

TABLE 9.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
60*:				
Wrightsville	Favorable	3,000	Plumegrass	15
	Normal	2,000	Switchgrass	10
	Unfavorable	1,250	Beaked panicum	10
			Uniola	10
			Paspalum	5
			Panicum	5
			Velvet panicum	5
			Sedge	5
			Blueberry	5
Elysian	Favorable	3,450	Little bluestem	15
	Normal	2,600	Panicum	10
	Unfavorable	2,000	Big bluestem	5
			Indiangrass	5
			Broadleaf uniola	5
			Sedge	5

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

TABLE 10.--BUILDING SITE DEVELOPMENT

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

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
1 Alusa	Severe: wetness, too clayey.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, low strength, shrink-swell.
2 Bernow	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.
3 Bernow	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength, shrink-swell.
4*: Bernow	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Moderate: low strength, shrink-swell, slope.
Romia	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
5*: Bernow	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength, slope.
Romia	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
6*: Bernow	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength, shrink-swell.
Bosville	Severe: too clayey, wetness.	Severe: shrink-swell, low strength, wetness.	Severe: shrink-swell, low strength, wetness.	Severe: low strength, wetness, shrink-swell.	Severe: low strength, shrink-swell.
Romia	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
7 Boggy	Severe: wetness,	Severe: wetness,	Severe: wetness,	Severe: wetness,	Severe: wetness,

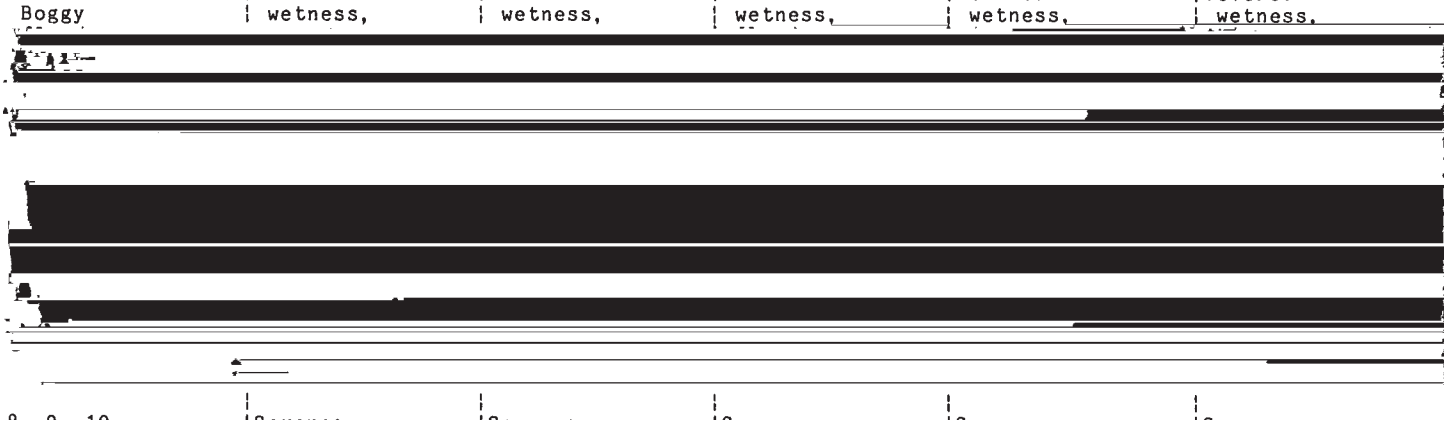


TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
13---------- Caspiana	Slight----------	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.
14*: Clebit----------	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, large stones.
Tuskahoma--------	Severe: wetness, too clayey.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: slope, wetness, shrink-swell.	Severe: low strength, shrink-swell.
15---------- Coushatta	Slight----------	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: low strength, shrink-swell.
16---------- Dela	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
17---------- Durant	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
18, 19, 20-------- Ferris	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
21---------- Garton	Severe: wetness, too clayey.	Severe: floods, shrink-swell, low strength.	Severe: wetness, floods, shrink-swell.	Severe: floods, shrink-swell, low strength.	Severe: low strength, shrink-swell.
22---------- Guyton	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
23---------- Heiden	Severe: cutbanks cave, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.
24, 25---------- Hollywood	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
26*: Hollywood--------	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
Swink----------	Severe: too clayey, depth to rock.	Severe: low strength, shrink-swell, depth to rock.	Severe: shrink-swell, low strength, depth to rock.	Severe: low strength, shrink-swell, depth to rock.	Severe: depth to rock, low strength, shrink-swell.
27---------- Hopco	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
28---------- Idabel	Slight----------	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: low strength.
29---------- Karma	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: low strength.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
30---------- Kaufman	Severe: too clayey,	Severe: floods,	Severe: floods,	Severe: floods,	Severe: floods,
31---------- Kaufman	Severe: too clayey, wetness.	Severe: floods, shrink-swell.	Severe: floods, shrink-swell.	Severe: floods, shrink-swell.	Severe: floods, shrink-swell.
32---------- Kiomatia	Severe: too sandy.	Severe: floods.	Severe: floods.	Severe: floods.	Slight.
33---------- Larue	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
34---------- Latanier	Severe: floods, wetness,	Severe: floods, shrink-swell,	Severe: floods, shrink-swell,	Severe: floods, shrink-swell,	Severe: shrink-swell, low strength.
35---------- Lula	Moderate: too clayey, depth to rock.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: low strength, shrink-swell.
36---------- Muskogee	Severe: too clayey, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell.
37---------- Newtonia	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: low strength, shrink-swell.
38---------- Oklared	Moderate: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: low strength.
39---------- Panola	Severe: wetness, too clayey.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: low strength, shrink-swell, wetness.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
47---------- Smithdale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
48---------- Smithdale	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight.
49---------- Speer	Moderate: too clayey, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: low strength, floods.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
60*: Elysian	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Moderate: low strength.

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

TABLE 11.--SANITARY FACILITIES

[redacted]

"slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1---------- Alusa	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey, hard to pack.
2, 3---------- Bernow	Slight----------	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
4*:					
Bernow----------	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.
Romia----------	Moderate: percs slowly, depth to rock, slope.	Severe: slope.	Moderate: depth to rock.	Moderate: slope.	Fair: too clayey, slope.
5*:					
Bernow----------	Slight----------	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
Romia----------	Moderate: percs slowly, depth to rock.	Moderate: seepage, slope.	Moderate: depth to rock.	Slight----------	Fair: too clayey, thin layer,

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
14*:					
Clebit	Severe: depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: seepage, depth to rock, large stones.	Severe: seepage.	Poor: thin layer, small stones, large stones.
Tuskahoma	Severe: percs slowly, wetness.	Severe: wetness, depth to rock, slope.	Severe: too clayey.	Severe: wetness.	Poor: too clayey, thin layer.
15--- Coushatta	Moderate: percs slowly, floods.	Moderate: seepage.	Moderate: too clayey, floods.	Moderate: floods.	Fair: too clayey.
16--- Dela	Severe: wetness, floods.	Severe: seepage, floods.	Severe: wetness, floods, seepage.	Severe: floods, seepage.	Good.
17--- Durant	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey.
18, 19--- Ferris	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey.
20--- Ferris	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey.
21--- Garton	Severe: percs slowly, wetness.	Severe: wetness, floods.	Severe: too clayey.	Severe: wetness.	Poor: too clayey.
22--- Guyton	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
23--- Heiden	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey.
24--- Hollywood	Severe: percs slowly.	Slight	Severe: too clayey, depth to rock.	Slight	Poor: too clayey.
25--- Hollywood	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, depth to rock.	Slight	Poor: too clayey.
26*:					
Hollywood	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, depth to rock.	Slight	Poor: too clayey.
Swink	Severe: percs slowly, depth to rock.	Severe: depth to rock.	Severe: too clayey, depth to rock.	Slight	Poor: too clayey, thin layer.
27--- Hopco	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Fair: too clayey.
28--- Idabel	Moderate: floods.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
29--- Karma	Slight	Severe: seepage.	Severe: seepage.	Slight	Slight.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
30--Kaufman	Severe: percs slowly, floods.	Slight	Severe: floods, too clayey, wetness.	Severe: floods.	Poor: too clayey, wetness.
31--Kaufman	Severe: percs slowly, floods.	Slight	Severe: floods, too clayey, wetness.	Severe: floods.	Poor: too clayey, wetness.
32--Kiomatia	Moderate: floods.	Severe: floods, seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
33--Larue	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Fair: too sandy.
34--Latanier	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey.
35--Lula	Moderate: depth to rock.	Moderate: seepage, depth to rock.	Severe: depth to rock.	Slight	Fair: too clayey.
36--Muskogee	Severe: percs slowly, wetness.	Moderate: slope.	Severe: too clayey, wetness.	Severe: wetness.	Fair: thin layer, too clayey.
37--Newtonia	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Fair: too clayey.
38--Oklared	Severe: wetness.	Severe: wetness, seepage.	Severe: seepage.	Severe: seepage.	Good.
39--Panola	Severe: percs slowly, wetness.	Severe: wetness.	Severe: too clayey, wetness.	Severe: wetness.	Poor: thin layer, too clayey, wetness.
40--Pledger	Severe: percs slowly, wetness.	Severe: wetness.	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey.
41--Redlake	Severe: percs slowly, floods.	Severe: floods.	Severe: floods, too clayey.	Severe: floods.	Poor: hard to pack, too clayey.
42--Roebuck	Severe: percs slowly, floods.	Severe: floods.	Severe: floods, too clayey.	Severe: floods.	Poor: too clayey.
43, 44--Ruston	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
45--Saffell	Slight	Moderate: slope, seepage.	Slight	Slight	Poor: small stones.
46--Severn	Moderate: floods.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
47--Smithdale	Moderate: slope.	Severe: seepage, slope.	Slight	Moderate: slope.	Fair: slope.
48--Smithdale	Slight	Severe: seepage, slope.	Slight	Slight	Good.
49--Speer	Moderate: floods, percs slowly.	Severe: floods.	Moderate: floods, too clayey.	Moderate: floods.	Fair: too clayey.
50*:					
Swink	Severe: percs slowly, depth to rock.	Severe: depth to rock.	Severe: too clayey, depth to rock.	Slight	Poor: too clayey, thin layer.
Hollywood	Severe: percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Slight	Poor: too clayey.
51, 52--Tenaha	Moderate: depth to rock.	Moderate: seepage.	Moderate: depth to rock.	Slight	Fair: too sandy.
53*:					
Tenaha	Moderate: depth to rock, slope.	Severe: slope.	Moderate: depth to rock.	Moderate: slope.	Fair: too sandy.
Kirvin	Severe: percs slowly.	Severe: slope.	Moderate: too clayey, depth to rock.	Moderate: slope.	Fair: too clayey.
54*:					
Tenaha	Moderate: depth to rock.	Moderate: seepage.	Moderate: depth to rock.	Slight	Fair: too sandy.
Smithdale	Moderate: slope.	Severe: seepage, slope.	Slight	Moderate: slope.	Fair: slope.
55--Trinity	Severe: wetness, floods, percs slowly.	Severe: wetness, floods.	Severe: floods, too clayey, wetness.	Severe: floods, wetness.	Poor: too clayey.
56--Tuscumbia	Severe: percs slowly, floods.	Severe: wetness, floods.	Severe: wetness, too clayey, floods.	Severe: wetness, floods.	Poor: wetness, too clayey.
57*. Udorthents					
58, 59--Whakana	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
60*:					
Wrightsville	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
Elysian	Severe: wetness.	Moderate: seepage.	Slight	Moderate: wetness.	Good.

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

TABLE 12.--CONSTRUCTION MATERIALS

[redacted]

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
14*: Tuskahoma	Poor: shrink-swell, low strength, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
15--- Coushatta	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
16--- Dela	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
17--- Durant	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, too clayey.
18, 19, 20--- Ferris	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
21--- Garton	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
22--- Guyton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
23--- Heiden	Poor: shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
24, 25--- Hollywood	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
26*: Hollywood	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Swink	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
27--- Hopco	Fair: shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
28--- Idabel	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
29--- Karma	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
30, 31--- Kaufman	Poor: shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
32--- Kiomatia	Good	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
33--- Larue	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.
34--- Latanier	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
35--Lula	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
36--Muskogee	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
37--Newtonia	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
38--Oklared	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
39--Panola	Poor: thin layer, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, too clayey.
40--Pledger	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
41--Redlake	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
42--Roebuck	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
43, 44--Ruston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
45--Saffell	Good	Poor: excess fines.	Fair: excess fines.	Poor: small stones.
46--Severn	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
47--Smithdale	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
48--Smithdale	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
49--Speer	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
50*:				
Swink	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Hollywood	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
54*:				
Tenaha	Good	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Smithdale	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
55--- Trinity	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
56--- Tuscumbia	Poor: shrink-swell, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.
57*. Udorthents				
58, 59--- Whakana	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
60*:				
Wrightsville	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Elysian	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.

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

TABLE 13.--WATER MANAGEMENT

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

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
1---------- Alusa	Slight---------	Moderate: compressible, unstable fill.	Severe: slow refill.	Percs slowly, wetness.	Percs slowly, wetness.	Percs slowly, wetness.
2, 3---------- Bernow	Moderate: seepage.	Slight---------	Severe: deep to water.	Not needed-----	Favorable------	Favorable.
4*: Bernow----------	Moderate: seepage.	Slight---------	Severe: deep to water.	Not needed-----	Slope----------	Slope.
Romia----------	Moderate: seepage, depth to rock.	Moderate: thin layer.	Severe: no water.	Not needed-----	Favorable------	Slope.
5*: Bernow----------	Moderate: seepage.	Slight---------	Severe: deep to water.	Not needed-----	Favorable------	Favorable.
Romia----------	Moderate: seepage, depth to rock.	Moderate: thin layer.	Severe: no water.	Not needed-----	Favorable------	Favorable.
6*: Bernow----------	Moderate: seepage.	Slight---------	Severe: deep to water.	Not needed-----	Favorable------	Favorable.
Bosville---------	Slight---------	Moderate: unstable fill, compressible, shrink-swell.	Severe: deep to water, slow refill.	Percs slowly, slope, wetness.	Percs slowly, slope, wetness.	Percs slowly, slope, wetness.
Romia----------	Moderate: seepage, depth to rock.	Moderate: thin layer.	Severe: no water.	Not needed-----	Favorable------	Favorable.
7---------- Boggy	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Floods---------	Not needed-----	Wetness.
8, 9, 10, 11------ Bosville	Slight---------	Moderate: unstable fill, compressible, shrink-swell.	Severe: deep to water, slow refill.	Percs slowly, slope, wetness.	Percs slowly, slope, wetness.	Percs slowly, slope, wetness.
12---------- Burleson	Slight---------	Moderate: unstable fill, hard to pack.	Severe: deep to water.	Percs slowly---	Percs slowly---	Percs slowly.
13---------- Caspiana	Moderate: seepage.	Slight---------	Severe: no water.	Favorable------	Not needed-----	Favorable.
14*: Clebit----------	Severe: depth to rock, seepage.	Severe: thin layer, large stones.	Severe: no water, large stones.	Not needed-----	Large stones, slope, depth to rock.	Large stones, depth to rock, droughty.
Tuskahoma--------	Severe: depth to rock.	Severe: thin layer.	Depth to rock, slow refill.	Percs slowly, depth to rock, slope.	Depth to rock, percs slowly.	Slope, depth to rock, percs slowly.
15---------- Coushatta	Moderate: seepage.	Slight---------	Severe: no water.	Favorable------	Not needed-----	Favorable.
16---------- Dela	Severe: seepage.	Moderate: unstable fill, seepage.	Moderate: deep to water.	Floods---------	Not needed-----	Not needed.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
17---------- Durant	Slight----------	Severe: piping, compressible.	Severe: no water.	Not needed-----	Percs slowly---	Percs slowly.
18, 19, 20-------- Ferris	Slight----------	Moderate: unstable fill.	Severe: no water.	Not needed-----	Percs slowly, erodes easily.	Percs slowly, erodes easily.
21---------- Garton	Moderate: seepage.	Moderate: unstable fill, piping.	Severe: slow refill.	Percs slowly---	Percs slowly---	Percs slowly.
22---------- Guyton	Slight----------	Moderate: erodes easily, low strength,	Severe: no water.	Cutbanks cave, floods, percs slowly.	Not needed-----	Wetness.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
38---- Oklared	Severe: seepage.	Moderate: unstable fill, piping.	Moderate: deep to water.	Not needed-----	Not needed-----	Not needed.
39---- Panola	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly, wetness.	Percs slowly, erodes easily, wetness.	Wetness, erodes easily, percs slowly.
40---- Pledger	Slight---------	Moderate: low strength.	Severe: deep to water.	Percs slowly, wetness.	Slow intake, wetness.	Wetness.
41---- Redlake	Slight---------	Moderate: unstable fill, compressible.	Severe: deep to water.	Floods, percs slowly.	Percs slowly---	Percs slowly.
42---- Roebuck	Slight---------	Moderate: hard to pack.	Severe: no water, slow refill.	Not needed-----	Not needed-----	Percs slowly.
43, 44---- Ruston	Moderate: seepage.	Slight---------	Severe: no water.	Not needed-----	Favorable------	Favorable.
45---- Saffell	Moderate: seepage.	Moderate: seepage, piping, thin layer.	Severe: no water.	Not needed-----	Erodes easily, slope, small stones.	Droughty, erodes easily, slope.
46---- Severn	Severe: seepage.	Moderate: unstable fill, piping, compressible.	Severe: deep to water.	Not needed-----	Favorable------	Favorable.
47---- Smithdale	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.
48---- Smithdale	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Favorable------	Favorable.
49---- Speer	Moderate: seepage.	Slight---------	Severe: no water.	Not needed-----	Favorable------	Favorable.
50*:						
Swink----------	Severe: depth to rock.	Severe: thin layer.	Severe: deep to water.	Not needed-----	Depth to rock, percs slowly.	Rooting depth, large stones.
Hollywood-------	Moderate: depth to rock.	Moderate: hard to pack.	Severe: no water, slow refill.	Percs slowly---	Percs slowly, erodes easily.	Percs slowly, erodes easily.
51, 52---- Tenaha	Moderate: seepage.	Moderate: piping.	Severe: no water.	Not needed-----	Erodes easily, slope.	Droughty, slope.
53*:						
Tenaha----------	Moderate: seepage.	Moderate: piping.	Severe: no water.	Not needed-----	Erodes easily, slope.	Droughty, slope.
Kirvin----------	Moderate: seepage.	Moderate: unstable fill, low strength.	Severe: no water.	Not needed-----	Complex slope, erodes easily.	Favorable.
54*:						
Tenaha----------	Moderate: seepage.	Moderate: piping.	Severe: no water.	Not needed-----	Erodes easily, slope.	Droughty, slope.
Smithdale-------	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
55---------- Trinity	Slight----------	Moderate: compressible, unstable fill.	Severe: deep to water.	Percs slowly, floods.	Floods, wetness, percs slowly.	Floods, wetness, percs slowly.
56---------- Tuscumbia	Slight----------	Moderate: unstable fill.	Severe: deep to water, slow refill.	Floods, percs slowly.	Not needed-----	Percs slowly, wetness.
57*. Udorthents						
58, 59---------- Whakana	Moderate: seepage.	Moderate: piping.	Severe: no water.	Not needed-----	Favorable------	Favorable.
60*: Wrightsville-----	Slight----------	Severe: unstable fill, compressible.	Severe: no water.	Favorable, wetness, percs slowly.	Not needed-----	Not needed.

TABLE 14.--RECREATIONAL DEVELOPMENT

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

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
1---------- Alusa	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
2, 3---------- Bernow	Slight----------	Slight----------	Moderate: slope.	Slight.
4*: Bernow----------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Romia----------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
5*: Bernow----------	Slight----------	Slight----------	Moderate: slope.	Slight.
Romia----------	Slight----------	Slight----------	Moderate: slope.	Slight.
6*: Bernow----------	Slight----------	Slight----------	Moderate: slope.	Slight.
Bosville----------	Severe: percs slowly.	Moderate: wetness.	Severe: percs slowly.	Slight.
Romia----------	Slight----------	Slight----------	Moderate: slope.	Slight.
7---------- Boggy	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
8---------- Bosville	Severe: percs slowly.	Moderate: wetness.	Severe: percs slowly.	Slight.
9---------- Bosville	Severe: percs slowly.	Moderate: wetness.	Severe: percs slowly, slope.	Slight.
10---------- Bosville	Severe: percs slowly.	Moderate: wetness.	Severe: percs slowly.	Slight.
11---------- Bosville	Severe: percs slowly.	Moderate: wetness.	Severe: percs slowly, slope.	Slight.
12---------- Burleson	Severe: percs slowly, too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
13---------- Caspiana	Slight----------	Slight----------	Slight----------	Slight.
14*: Clebit----------	Severe: large stones.	Severe: large stones.	Severe: slope, small stones, large stones.	Severe: large stones.

See footnote at end of table.

TABLE 14.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
14*: Tuskahoma	Severe: percs slowly, wetness.	Moderate: wetness, slope.	Severe: slope, percs slowly, depth to rock.	Moderate: wetness.
15--- Coushatta	Moderate: too clayey.	Moderate: too clayey.	Moderate: too clayey.	Moderate: too clayey.
16--- Dela	Severe: floods.	Moderate: floods.	Moderate: floods.	Slight.
17--- Durant	Severe: percs slowly.	Slight	Severe: percs slowly.	Slight.
18, 19--- Ferris	Severe: too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey, percs slowly.	Severe: too clayey.
20--- Ferris	Severe: too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey, percs slowly, slope.	Severe: too clayey.
21--- Garton	Severe: floods.	Moderate: floods.	Moderate: floods.	Slight.
22--- Guyton	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
23--- Heiden	Severe: too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey, percs slowly.	Severe: too clayey.
24, 25--- Hollywood	Severe: percs slowly, too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
26*: Hollywood	Severe: percs slowly, too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
Swink	Severe: too clayey, large stones.	Severe: too clayey, large stones.	Severe: too clayey, depth to rock.	Severe: too clayey, large stones.
27--- Hopco	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.
28--- Idabel	Slight	Slight	Slight	Slight.
29--- Karma	Slight	Slight	Slight	Slight.
30--- Kaufman	Severe: floods, too clayey.	Severe: floods, too clayey.	Severe: floods, too clayey.	Severe: too clayey.
31--- Kaufman	Severe: floods, too clayey.	Severe: floods, too clayey.	Severe: floods, too clayey.	Severe: too clayey.
32---	Severe:	Moderate:	Moderate:	Moderate:

TABLE 14.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
33--Larue	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
34--Latanier	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
35--Lula	Slight	Slight	Moderate: slope.	Slight.
36--Muskogee	Moderate: percs slowly, wetness.	Slight	Moderate: slope, percs slowly, wetness.	Slight.
37--Newtonia	Slight	Slight	Moderate: slope.	Slight.
38--Oklared	Slight	Slight	Slight	Slight.
39--Panola	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Moderate: wetness.
40--Pledger	Severe: percs slowly, too clayey, wetness.	Severe: too clayey.	Severe: percs slowly, too clayey, wetness.	Severe: too clayey.
41--Redlake	Severe: floods, percs slowly, too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
42--Roebuck	Severe: floods, percs slowly.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
43, 44--Ruston	Slight	Slight	Moderate: slope.	Slight.
45--Saffell	Severe: small stones.	Moderate: small stones.	Severe: small stones, slope.	Moderate: small stones.
46--Severn	Slight	Slight	Slight	Slight.
47--Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
48--Smithdale	Slight	Slight	Moderate: slope.	Slight.
49--Speer	Severe: floods.	Slight	Slight	Slight.
50*:				
Swink	Severe: too clayey, large stones.	Severe: too clayey, large stones.	Severe: slope, too clayey, depth to rock.	Severe: too clayey, large stones.
Hollywood	Severe: percs slowly, too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey, slope.	Severe: too clayey.

See footnote at end of table.

TABLE 14.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
51---------- Tenaha	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
52---------- Tenaha	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
53*: Tenaha----------	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.

TABLE 15.--WILDLIFE HABITAT POTENTIALS

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

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
1---------- Alusa	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
2, 3---------- Bernow	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
4*:										
Bernow----------	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Romia----------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
5*:										
Bernow----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Romia----------	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
6*:										
Bernow----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Bosville----------	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Romia----------	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
7---------- Boggy	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
8---------- Bosville	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
9, 10, 11---------- Bosville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
12---------- Burleson	Good	Good	Poor	---	---	Very poor.	Very poor.	Fair	---	Very poor.
13---------- Caspiana	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
14*:										
Clebit----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Tuskahoma----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
15---------- Coushatta	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Poor.
16---------- Dela	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
17---------- Durant	Good	Good	Good	---	---	Poor	Poor	Good	---	Poor.

See footnote at end of table.

TABLE 15.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
18, 19----------Ferris	Fair	Good	Fair	---	---	Very poor.	Very poor.	Fair	---	Very poor.
20----------Ferris	Poor	Fair	Fair	---	---	Very poor.	Very poor.	Fair	---	Very poor.
21----------Garton	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
22----------Guyton	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
23----------Heiden	Fair	Good	Fair	---	---	Poor	Very poor.	Fair	---	Very poor.
24----------	Fair	Fair	Fair	---	---	Poor	Poor	Fair	---	Poor.

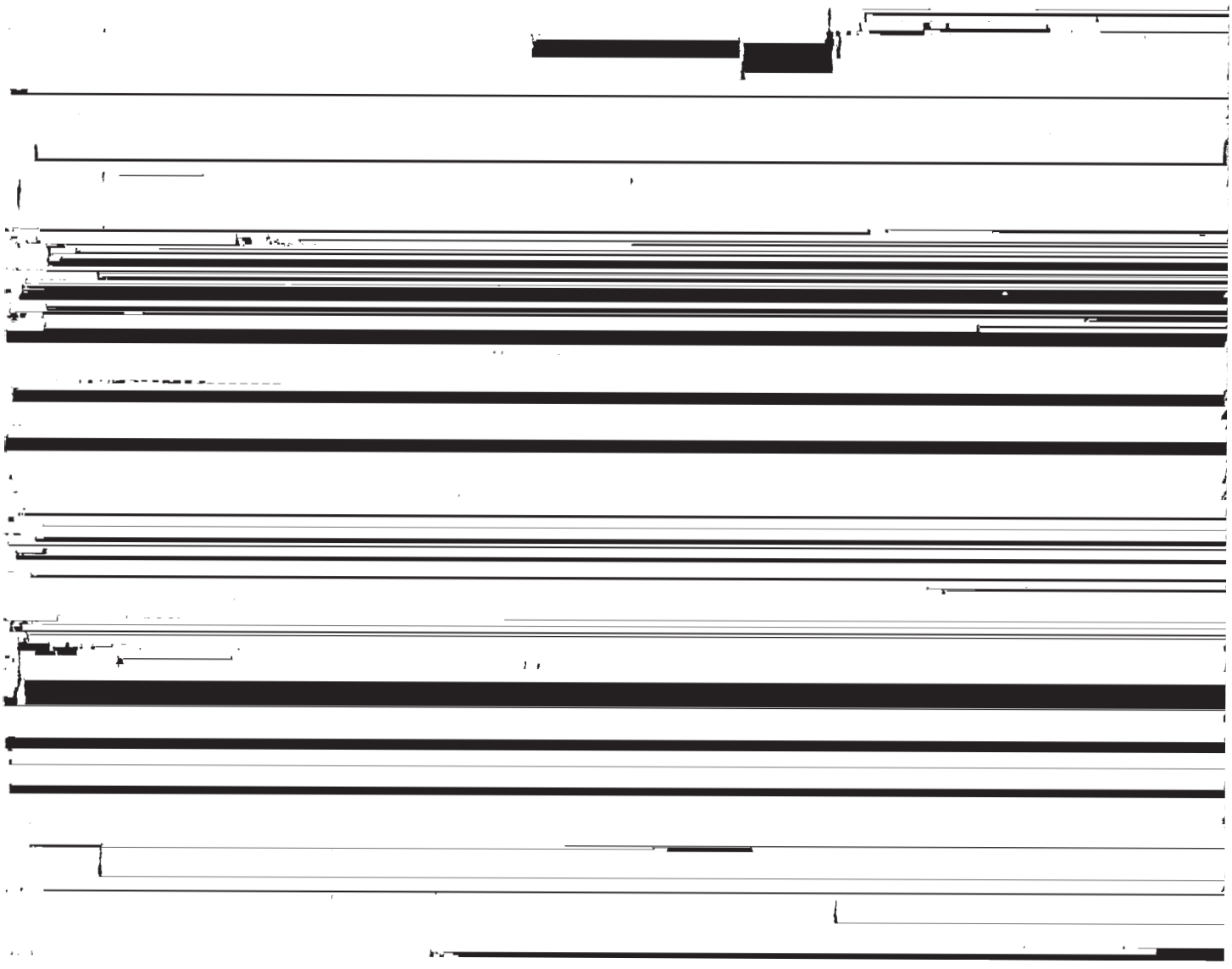


TABLE 15.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
40---- Pledger	Fair	Fair	Fair	Good	Good	Poor	Good	Fair	Good	Fair.
41---- Redlake	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
42---- Roebuck	Fair	Fair	Poor	Good	Good	Poor	Fair	Poor	Fair	Poor.
43, 44---- Ruston	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
45---- Saffell	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
46---- Severn	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
47, 48---- Smithdale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
49---- Speer	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
50*: Swink----	Very poor.	Poor	Poor	---	---	Poor	Very poor.	Poor	---	Very poor.
Hollywood----	Fair	Fair	Fair	---	---	Poor	Very poor.	Fair	---	Very poor.
51, 52---- Tenaha	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
53*: Tenaha----	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Kirvin----	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
54*: Tenaha----	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Smithdale----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
55---- Trinity	Poor	Fair	Fair	Good	---	Poor	Fair	Fair	Fair	Poor.
56---- Tuscumbia	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
57*. Udorthents										
58---- Whakana	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
59---- Whakana	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
60*: Wrightsville----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Elysian----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

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

TABLE 16.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

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

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1---------- Alusa	0-8	Loam----------	ML, CL, CL-ML	A-4	0	98-100	98-100	94-100	65-97	<31	NP-10
	8-54	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	98-100	98-100	94-100	80-98	46-70	25-44
	54-72	Clay----------	CH	A-7	0	80-100	80-100	75-95	70-95	56-70	33-44
2, 3---------- Bernow	0-23	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-4	0	100	98-100	94-100	36-60	<26	NP-7
	23-34	Loam, clay loam, sandy clay loam.	CL, SC	A-4, A-6	0	100	100	90-100	36-90	25-40	7-18
	34-72	Clay loam, sandy clay loam.	CL, SC	A-4, A-6	0	100	100	90-100	36-90	25-40	7-18
4*, 5*: Bernow----------	0-9	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-4	0	100	98-100	94-100	36-60	<26	NP-7
	9-56	Loam, clay loam, sandy clay loam.	CL, SC	A-4, A-6	0	100	100	90-100	36-90	25-40	7-18
	56-72	Clay loam, sandy clay loam.	CL, SC	A-4, A-6	0	100	100	90-100	36-90	25-40	7-18
Romia----------	0-10	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-4	0	100	98-100	94-100	36-60	<26	NP-7
	10-41	Sandy clay loam, clay loam, gravelly sandy clay loam.	SC, CL	A-2, A-4, A-6	0	50-100	50-100	50-95	20-90	25-40	7-18
	41-56	Weathered bedrock.	---	---	---	---	---	---	---	---	---
6*: Bernow----------	0-8	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-4	0	100	98-100	94-100	36-60	<26	NP-7
	8-30	Loam, clay loam, sandy clay loam.	CL, SC	A-4, A-6	0	100	100	90-100	36-90	25-40	7-18
	30-62	Clay loam, sandy clay loam.	CL, SC	A-4, A-6	0	100	100	90-100	36-90	25-40	7-18
Bosville----------	0-6	Fine sandy loam	SM, ML, CL, SC	A-4	0	100	98-100	94-100	36-60	<30	NP-10
	6-70	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	96-100	80-99	37-65	15-35
Romia----------	0-14	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-4	0	100	98-100	94-100	36-60	<26	NP-7
	14-44	Sandy clay loam, clay loam, gravelly sandy clay loam.	SC, CL	A-2, A-4, A-6	0	50-100	50-100	50-95	20-90	25-40	7-18
	44-58	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 16.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
7---------- Boggy	0-20	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-4	0	100	98-100	94-100	36-85	<29	NP-7
	20-68	Fine sandy loam, loam.	ML, SM, CL-ML, SM-SC	A-4	0	100	98-100	94-100	36-85	<29	NP-7
8, 9, 10, 11------- Bosville	0-12	Fine sandy loam	SM, ML, CL, SC	A-4	0	100	98-100	94-100	36-60	<30	NP-10
	12-64	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	96-100	80-99	37-65	15-35
12---------- Burleson	0-48	Clay----------	CH, MH	A-7-6, A-7-5	0-2	83-100	80-100	80-100	80-95	51-80	27-55
	48-64	Clay, silty clay	CH, MH	A-7-6, A-7-5	0-1	95-100	80-100	75-95	70-95	51-80	30-55
13---------- Caspiana	0-18	Silt loam-------	CL-ML, ML	A-4	0	100	100	100	85-100	<27	NP-7
	18-48	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	100	85-100	32-43	11-20
	48-72	Silt loam, very fine sandy loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	80-100	23-37	4-15
14*:											
Clebit----------	0-4	Stony loam------	GM, GC, GM-GC	A-4, A-2, A-1	10-30	45-60	45-60	30-55	15-45	<31	NP-10
	4-16	Gravelly very fine sandy loam, gravelly loam, gravelly fine sandy loam.	GM, GC, GM-GC	A-4, A-2, A-1	30-40	40-60	40-60	30-55	15-50	<31	NP-10
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tuskahoma---------	0-4	Loam----------	ML, CL, CL-ML	A-4	0	85-100	80-100	75-100	55-97	22-31	2-10
	4-12	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	60-100	55-100	50-100	50-99	37-60	15-34
	12-18	Shaly silty clay, shaly clay, shaly silty clay loam.	CH, CL, GC, SC	A-7	0	45-70	45-70	40-70	30-70	37-60	15-34
	18-30	Weathered bedrock.	---	---	---	---	---	---	---	---	---
15---------- Coushatta	0-8	Silty clay loam	CL	A-6	0	100	100	100	90-100	34-40	15-20
	8-31	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-100	28-40	12-20
	31-72	Silt loam, silty clay loam, very fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0	100	100	100	70-100	<40	NP-20
16---------- Dela	0-11	Fine sandy loam	ML, CL, SM, SC	A-4	0	100	98-100	94-100	36-60	<30	NP-10
	11-26	Fine sandy loam, sandy loam, loam.	ML, CL, SM, SC	A-4	0	100	98-100	94-100	36-70	<30	NP-10
	26-72	Fine sandy loam, sandy loam, loamy fine sand.	ML, CL, SM, SC	A-2, A-4	0	100	98-100	90-100	15-60	<30	NP-10

See footnote at end of table.

TABLE 16.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
17---------- Durant	0-8	Silt loam-------	CL	A-4, A-6	0	100	100	96-100	65-97	28-40	8-17
	8-11	Clay loam, silty clay loam, clay.	CL, CH	A-6, A-7	0	100	100	96-100	80-98	37-70	15-39
	11-64	Clay----------	CL, CH	A-7	0	100	100	96-100	90-95	45-70	21-39
18, 19, 20--------- Ferris	0-62	Clay----------	CH	A-7-6	0	95-100	95-100	75-100	75-98	51-70	35-50
21---------- Garton	0-6	Silty clay loam	CL, ML	A-4, A-6	0	100	100	96-100	75-98	30-40	8-17
	6-46	Silty clay loam, clay, silty clay.	CL, CH	A-6, A-7	0	100	100	96-100	80-99	37-60	15-33
	46-75	Loam, clay loam	CL	A-4, A-6, A-7	0	98-100	98-100	96-100	75-90	30-45	9-21
22---------- Guyton	0-18	Silt loam-------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	18-72	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	75-95	26-40	6-18
23---------- Heiden	0-18	Clay----------	CH	A-7-6	0	95-100	90-100	80-100	75-99	54-80	35-55
	18-64	Clay, silty clay	CH	A-7-6	0	90-100	90-100	75-100	70-99	52-80	35-55
24, 25---------- Hollywood	0-19	Silty clay------	CL	A-6, A-7	0	98-100	98-100	95-100	75-95	25-45	11-25
	19-72	Silty clay, clay	CH	A-7	0	98-100	98-100	95-100	75-95	51-75	25-45
26*: Hollywood---------	0-8	Silty clay------	CL	A-6, A-7	0	98-100	98-100	95-100	75-95	25-45	11-25
	8-60	Silty clay, clay	CH	A-7	0	98-100	98-100	95-100	75-95	51-75	25-45
	60-70	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Swink----------	0-14	Stony clay------	CL, CH	A-7	10-85	90-95	90-95	90-95	85-95	45-65	25-40
	14-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
27---------- Hopco	0-40	Silty clay loam	CL	A-4, A-6, A-7	0	100	100	95-100	80-95	28-43	9-22
	40-60	Clay loam, silty clay loam, loam.	CL, ML	A-4, A-6, A-7	0	100	100	90-100	70-85	28-43	8-20
28---------- Idabel	0-8	Silt loam-------	ML, CL, CL-ML	A-4	0	100	100	94-100	65-90	<30	NP-10
	8-72	Silt loam, very fine sandy loam, fine sandy loam.	SM, SC, ML, CL	A-4	0	100	98-100	94-100	36-85	<31	NP-10
29---------- Karma	0-18	Fine sandy loam	ML, CL, SM, SC	A-4	0	100	98-100	94-100	36-85	<31	NP-10
	18-46	Sandy clay loam, clay loam.	CL, SC	A-4, A-6	0	100	100	90-100	36-90	25-40	7-18
	46-80	Fine sandy loam, loam, sandy clay loam.	ML, CL, SM, SC	A-4, A-6	0	100	98-100	90-100	36-85	<37	NP-16
30, 31---------- Kaufman	0-26	Clay----------	CH	A-7	0	100	100	90-100	80-95	56-75	33-49
	26-60	Clay----------	CH	A-7	0	100	100	95-100	90-100	76-96	49-70
32---------- Kiomatia	0-6	Loamy fine sand	SM, SM-SC	A-4, A-2-4	0	100	95-100	80-100	30-45	<26	NP-7
	6-62	Stratified fine sand to loam.	SM, SM-SC	A-2-4	0	100	95-100	80-90	13-35	<22	NP-5

See footnote at end of table.

TABLE 16.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
33---------- Larue	0-28	Loamy fine sand	SM	A-2-4	0	100	98-100	50-75	15-30	---	NP
	28-42	Sandy clay loam	SC, SM-SC	A-2-4, A-4, A-6	0	100	95-100	80-90	30-45	20-35	5-12
	42-80	Sandy clay loam, loam, clay loam.	SM, SM-SC, SC	A-2-4, A-4	0	100	95-100	60-70	30-40	20-30	3-10
34---------- Latanier	0-12	Clay----------	CH	A-7-6	0	100	100	100	95-100	51-75	26-45
	12-23	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	26-45
	23-66	Silt loam, silty clay loam, very fine sandy loam.	CL-ML, CL, ML	A-4, A-6	0	100	100	100	80-100	<40	NP-17
35---------- Lula	0-6	Silt loam-------	CL, ML, CL-ML	A-4, A-6	0	100	100	96-100	65-97	21-37	1-15
	6-12	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4, A-7	0	100	100	96-100	65-98	30-43	9-20
	12-56	Silty clay loam, clay loam.	CL	A-6, A-7	0	95-100	95-100	95-100	75-98	33-50	12-26
	56-61	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
36---------- Muskogee	0-10	Silt loam-------	ML, CL, CL-ML	A-4	0	100	100	95-100	85-100	18-30	1-10
	10-26	Silty clay loam, silt loam.	CL, CH	A-6, A-7-6	0	100	100	95-100	90-100	35-55	15-30
	26-72	Silty clay, clay	CH	A-7-6	0	100	100	95-100	90-100	55-70	30-40
37---------- Newtonia	0-6	Silt loam-------	CL, ML	A-4, A-6	0	100	100	96-100	65-97	30-37	9-14
	6-10	Silt loam, silty clay loam.	CL, ML	A-4, A-6	0	100	100	96-100	80-98	30-40	8-19
	10-32	Silty clay loam	CL	A-6, A-7	0	100	100	98-100	90-98	33-42	12-19
	32-68	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	96-100	90-98	37-60	15-34
38---------- Oklared	0-10	Very fine sandy loam.	SM, SC, ML, CL	A-4	0	100	98-100	94-100	36-60	<30	NP-10
	10-44	Fine sandy loam, very fine sandy loam, loam.	SM, SC, ML, CL	A-4	0	100	98-100	94-100	36-60	<30	NP-10
	44-72	Fine sandy loam, very fine sandy loam, loamy fine sand.	SM, SC, ML, CL	A-2, A-4	0	100	98-100	90-100	15-60	<30	NP-10
39---------- Panola	0-9	Silt loam-------	CL, ML	A-4, A-6	0	100	100	96-100	75-95	30-40	8-17
	9-39	Clay loam, silty clay loam, silty clay.	CL, CH	A-7	0	95-100	95-100	90-100	85-99	45-60	25-37
	39-72	Clay----------	CH	A-7	0	95-100	95-100	90-100	85-95	55-70	33-44
40---------- Pledger	0-6	Clay----------	CH, CL	A-7-6	0	100	100	90-100	75-95	44-66	22-39
	6-72	Clay, clay loam, silty clay loam.	CH, CL	A-7-6	0	100	100	90-100	75-95	44-66	22-39
41---------- Redlake	0-42	Clay----------	CL, CH, ML, MH	A-7	0	100	100	98-100	90-99	41-70	18-38
	42-72	Clay loam-------	CL	A-6, A-7	0	100	100	96-100	80-90	37-50	16-26
42---------- Roebuck	0-70	Clay----------	CL, CH	A-6, A-7	0	100	100	96-100	90-99	37-70	15-40

See footnote at end of table.

TABLE 16.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
43, 44---------- Ruston	0-16	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	16-41	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
	41-80	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
45---------- Saffell	0-11	Gravelly fine sandy loam.	SM	A-1, A-2, A-4	0-5	70-80	50-75	40-65	20-40	<20	NP-3
	11-58	Very gravelly sandy clay loam, very gravelly fine sandy loam, very gravelly loam.	GC, SC, SM-SC, GM-GC	A-2, A-1	0-15	35-85	25-70	20-55	15-35	20-40	4-18
	58-65	Gravelly sandy	GM, GC,	A-1,	0-5	25-80	10-70	5-60	5-35	<35	NP-15

TABLE 16.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
53*:											
Kirvin	0-8	Fine sandy loam	SM, SM-SC	A-4	0-2	75-100	75-95	65-90	36-50	<25	NP-4
	8-45	Clay, sandy clay, clay loam.	CH, MH, CL, ML	A-7	0	95-100	85-100	85-99	51-75	41-60	15-30
	45-52	Sandy clay loam, clay loam, sandy loam.	CL, SC, SM, ML	A-4, A-6	0	95-100	85-100	85-99	36-65	20-40	4-20
	52-65	Weathered bedrock.	---	---	---	---	---	---	---	---	---
54*:											
Tenaha	0-22	Loamy fine sand	SM	A-2-4	0	95-100	95-100	70-85	15-34	---	NP
	22-54	Sandy clay loam	SC, CL	A-6, A-4	0	95-100	95-100	80-90	36-55	25-35	8-15
	54-65	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Smithdale	0-12	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	12-56	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	56-64	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
55---------- Trinity	0-62	Clay----------	CH	A-7	0	100	98-100	85-100	80-99	55-90	30-60
56---------- Tuscumbia	0-8	Clay----------	CL	A-7, A-6	0	100	100	90-100	75-90	35-50	15-25
	8-64	Clay, silty clay, silty clay loam.	CH	A-7	0	100	100	95-100	80-95	51-75	30-50
57*. Udorthents											
58, 59---------- Whakana	0-12	Very fine sandy loam.	CL-ML, SM, SC, SM-SC	A-4	0	100	100	75-90	36-70	<25	NP-10
	12-37	Loam, sandy clay loam, clay loam.	CL	A-4, A-6	0	100	100	90-100	70-80	25-40	8-20
	37-72	Loam, sandy clay loam.	SM-SC, SC, CL, CL-ML	A-4, A-6	0	100	100	80-90	36-55	21-38	6-16
60*:											
Wrightsville------	0-12	Silt loam-------	ML, CL, CL-ML	A-4	0	100	95-100	90-100	75-100	<31	NP-10
	12-56	Silty clay, clay, silty clay loam.	CH, CL, MH	A-7	0	100	100	95-100	90-100	41-65	22-40
	56-70	Silty clay loam, silty clay, clay.	CL, CH, MH	A-7, A-6	0	100	95-100	95-100	90-100	35-65	16-40
Elysian----------	0-34	Very fine sandy loam.	SM, ML, SC, CL	A-4	0	100	98-100	94-100	36-75	<30	NP-10
	34-72	Loam----------	ML, CL	A-4	0	100	95-100	94-100	65-85	22-30	2-10

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

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors	
							K	T
	In	In/hr	In/in	pH	Mmhos/cm			
1----------	0-8	0.6-2.0	0.15-0.24	5.1-6.0	<2	Low----------	0.49	5
Alusa	8-54	<0.06	0.12-0.22	4.5-7.3	<2	High----------	0.43	
	54-72	<0.06	0.12-0.18	7.4-8.4	<2	High----------	0.37	
2, 3----------	0-23	2.0-6.0	0.11-0.15	5.1-7.3	<2	Low----------	0.24	5
Bernow	23-34	0.6-2.0	0.12-0.20	4.5-6.5	<2	Moderate-------	0.32	
	34-72	0.6-2.0	0.12-0.20	4.5-6.5	<2	Low----------	0.32	
4*, 5*:								
Bernow----------	0-9	2.0-6.0	0.11-0.15	5.1-7.3	<2	Low----------	0.24	5
	9-37	0.6-2.0	0.12-0.20	4.5-6.5	<2	Moderate-------	0.32	
	37-72	0.6-2.0	0.12-0.20	4.5-6.5	<2	Low----------	0.32	
Romia----------	0-10	2.0-6.0	0.11-0.15	5.1-6.5	<2	Low----------	0.24	3
	10-41	0.6-2.0	0.08-0.18	4.5-6.0	<2	Low----------	0.32	
	41-56	---	---	---	---	----------	---	
6*:								
Bernow----------	0-8	2.0-6.0	0.11-0.15	5.1-7.3	<2	Low----------	0.24	5
	8-30	0.6-2.0	0.12-0.20	4.5-6.5	<2	Moderate-------	0.32	
	30-62	0.6-2.0	0.12-0.20	4.5-6.5	<2	Low----------	0.32	
Bosville--------	0-6	0.6-2.0	0.11-0.15	5.1-6.0	<2	Low----------	0.37	5
	6-70	<0.06	0.15-0.20	4.5-6.0	<2	High----------	0.43	
Romia----------	0-14	2.0-6.0	0.11-0.15	5.1-6.5	<2	Low----------	0.24	3
	14-44	0.6-2.0	0.08-0.18	4.5-6.0	<2	Low----------	0.32	
	44-58	---	---	---	---	----------	---	
7----------	0-20	0.6-2.0	0.11-0.15	5.6-6.5	<2	Low----------	0.24	5
Boggy	20-68	0.6-2.0	0.11-0.15	5.1-6.5	<2	Low----------	0.24	
8, 9, 10, 11-----	0-12	0.6-2.0	0.11-0.15	5.1-6.0	<2	Low----------	0.37	5
Bosville	12-64	<0.06	0.15-0.20	4.5-6.0	<2	High----------	0.43	
12----------	0-48	<0.06	0.12-0.18	5.6-8.4	<2	High----------	0.32	5
Burleson	48-64	<0.06	0.12-0.18	7.4-8.4	<2	High----------	0.32	
13----------	0-18	0.6-2.0	0.21-0.23	5.6-8.4	<2	Low----------	0.37	5
Caspiana	18-48	0.6-2.0	0.20-0.22	5.6-8.4	<2	Moderate-------	0.32	
	48-72	0.6-2.0	0.15-0.23	6.1-8.4	<2	Low----------	0.32	
14*:								
Clebit----------	0-4	2.0-6.0	0.06-0.10	5.1-6.5	<2	Low----------	0.20	1
	4-16	2.0-6.0	0.06-0.10	4.5-6.5	<2	Low----------	0.20	
	16-20	---	---	---	---	----------	---	
Tuskahoma-------	0-4	0.2-2.0	0.15-0.24	5.6-7.8	<2	Low----------	0.49	1
	4-12	<0.06	0.08-0.20	5.1-7.3	<2	High----------	0.37	
	12-18	<0.06	0.05-0.15	5.6-7.8	<2	High----------	0.32	
	18-30	---	---	---	---	----------	---	
15----------	0-8	0.2-0.6	0.18-0.21	5.6-7.3	<2	Moderate-------	0.32	5
Coushatta	8-31	0.6-2.0	0.18-0.23	6.1-8.4	<2	Moderate-------	0.32	
	31-72	0.6-2.0	0.14-0.23	6.6-8.4	<2	Low----------	0.37	
16----------	0-11	2.0-6.0	0.10-0.15	5.1-6.5	<2	Low----------	0.20	5
Dela	11-26	2.0-6.0	0.10-0.20	5.1-6.5	<2	Low----------	0.32	
	26-72	2.0-6.0	0.07-0.15	5.1-6.5	<2	Low----------	0.20	

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors	
							K	T
	In	In/hr	In/in	pH	Mmhos/cm			
18, 19, 20------- Ferris	0-62	<0.06	0.15-0.18	7.9-8.4	<2	Very high------	0.32	4
21----------	0-6	0.2-2.0	0.15-0.24	6.1-7.3	<2	Low----------	0.43	5
Garton	6-46	0.06-0.2	0.12-0.22	6.1-7.8	<2	High----------	0.37	
	46-75	0.2-0.6	0.15-0.20	6.6-7.8	<2	Moderate-------	0.37	
22----------	0-18	0.6-2.0	0.20-0.23	4.5-6.0	<2	Low----------	0.49	3
Guyton	18-72	0.06-0.2	0.15-0.22	4.5-5.5	<2	Low----------	0.37	
23----------	0-18	<0.06	0.15-0.20	7.9-8.4	<2	Very high------	0.32	5

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors	
							K	T
	In	In/hr	In/in	pH	Mmhos/cm			
39----------	0-9	0.2-2.0	0.15-0.24	5.1-6.5	<2	Moderate-------	0.49	5
Panola	9-39	0.2-2.0	0.12-0.22	4.5-6.5	<2	High----------	0.43	
	39-72	<0.06	0.12-0.18	5.1-7.8	<2	High----------	0.37	
40----------	0-6	0.06-0.2	0.12-0.22	6.1-8.4	<2	High----------	0.32	5
Pledger	6-72	<0.06	0.12-0.18	7.4-8.4	<2	High----------	0.32	
41----------	0-42	<0.06	0.12-0.18	7.4-8.4	<2	High----------	0.37	5
Redlake	42-72	0.06-0.2	0.15-0.20	7.4-8.4	<2	Moderate-------	0.43	
42----------	0-70	<0.06	0.12-0.20	6.1-8.4	<2	High----------	0.37	5
Roebuck								
43, 44----------	0-16	0.6-2.0	0.09-0.16	5.1-6.5	<2	Low-----------	0.32	5
Ruston	16-41	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low-----------	0.28	
	41-80	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low-----------	0.28	
45----------	0-11	2.0-6.0	0.05-0.10	4.5-5.5	<2	Low-----------	0.20	4
Saffell	11-58	0.6-2.0	0.06-0.12	4.5-5.5	<2	Low-----------	0.28	
	58-65	0.6-6.0	0.04-0.11	4.5-5.5	<2	Low-----------	0.17	
46----------	0-10	2.0-6.0	0.13-0.20	7.4-8.4	<2	Low-----------	0.32	5
Severn	10-72	2.0-6.0	0.11-0.20	7.9-8.4	<2	Low-----------	0.32	
47, 48----------	0-16	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low-----------	0.28	5
Smithdale	16-38	0.6-2.0	0.15-0.17	4.5-5.5	<2	Low-----------	0.24	
	38-66	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low-----------	0.28	
49----------	0-12	0.6-2.0	0.11-0.15	5.1-7.3	<2	Low-----------	0.24	5
Speer	12-44	0.6-2.0	0.12-0.20	4.5-6.0	<2	Low-----------	0.32	
50*:								
Swink----------	0-14	0.06-0.2	0.07-0.12	6.6-8.4	<2	High----------	0.32	1
	14-30	---	---	---	---	---	---	
Hollywood-------	0-18	0.2-0.6	0.15-0.22	6.1-8.4	<2	Moderate-------	0.32	3
	18-56	<0.06	0.12-0.18	6.6-8.4	<2	High----------	0.37	
	56-66	---	---	---	---	---	---	
51, 52----------	0-28	6.0-20	0.07-0.11	5.1-6.5	<2	Low-----------	0.17	3
Tenaha	28-56	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low-----------	0.24	
	56-72	---	---	---	---	---	---	
53*:								
Tenaha----------	0-28	6.0-20	0.07-0.11	5.1-6.5	<2	Low-----------	0.17	3
	28-56	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low-----------	0.24	
	56-65	---	---	---	---	---	---	
Kirvin----------	0-8	2.0-6.0	0.10-0.15	5.1-7.3	<2	Low-----------	0.37	4
	8-45	0.2-0.6	0.12-0.18	3.6-5.5	<2	Moderate-------	0.32	
	45-52	0.6-2.0	0.12-0.17	3.6-5.5	<2	Moderate-------	0.32	
	52-65	---	---	---	---	---	---	
54*:								
Tenaha----------	0-22	6.0-20	0.07-0.11	5.1-6.5	<2	Low-----------	0.17	3
	22-54	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low-----------	0.24	
	54-65	---	---	---	---	---	---	
Smithdale-------	0-12	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low-----------	0.28	5
	12-44	0.6-2.0	0.15-0.17	4.5-5.5	<2	Low-----------	0.24	
	44-64	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low-----------	0.28	
55----------	0-62	<0.06	0.15-0.20	7.4-8.4	<2	Very high------	0.32	5
Trinity								

See footnote at end of table.

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors	
							K	T
	In	In/hr	In/in	pH	Mmhos/cm			
56----------	0-4	0.06-0.20	0.20-0.22	5.0-8.4	<2	High----------	0.28	3
Tuscumbia	4-64	<0.06	0.18-0.20	5.0-8.4	<2	Very high------	0.28	
57*.								
Udorthents								
58, 59----------	0-12	2.0-6.0	0.10-0.15	5.1-7.3	<2	Low----------	0.32	5
Whakana	12-37	0.6-2.0	0.10-0.15	4.5-6.5	<2	Moderate-------	0.32	
	37-72	0.6-2.0	0.10-0.15	4.5-6.0	<2	Low----------	0.32	
60*:								
Wrightsville----	0-12	0.2-0.6	0.16-0.24	3.6-5.5	<2	Low----------	0.49	5
	12-56	<0.06	0.14-0.22	3.6-5.5	<2	High----------	0.37	
	56-70	<0.06	0.14-0.22	3.6-8.4	<2	High----------	0.43	
Elysian---------	0-34	2.0-6.0	0.11-0.20	4.5-6.5	<2	Low----------	0.37	5
	34-72	0.6-2.0	0.15-0.20	4.5-6.0	<2	Low----------	0.37	

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

TABLE 18.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
1---------- Alusa	D	None--------	---	---	0-1.0	Perched	Nov-Apr	>60	---	High-----	Moderate.
2, 3---------- Bernow	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
4*, 5*: Bernow----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Romia----------	B	None--------	---	---	>6.0	---	---	40-60	Ripable	High-----	High.
6*: Bernow----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Bosville---------	D	None--------	---	---	1.0-2.0	Perched	Feb-Jul	>60	---	High-----	High.
Romia----------	B	None--------	---	---	>6.0	---	---	40-60	Ripable	High-----	High.
7---------- Boggy	C	Frequent----	Very brief	Jan-May	0.0-2.0	Apparent	Nov-Apr	>60	---	Moderate	Moderate.
8, 9, 10, 11------ Bosville	D	None--------	---	---	1.0-2.0	Perched	Feb-Jul	>60	---	High-----	High.
12---------- Burleson	D	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
13---------- Caspiana	B	None--------	---	---	>4.0	Apparent	Dec-Apr	>60	---	Moderate	Low.
14*: Clebit----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	Moderate.
Tuskahoma--------	D	None--------	---	---	0.5-1.5	Perched	Nov-Apr	10-20	Ripable	High-----	Moderate.
15---------- Coushatta	B	Rare--------	Brief-----	Dec-Jun	4.0-6.0	Apparent	Dec-Apr	>60	---	Moderate	Low.
16---------- Dela	B	Occasional	Very brief	Nov-May	3.0-5.0	Apparent	Nov-May	>60	---	Moderate	Moderate.
17---------- Durant	D	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
18, 19, 20-------- Ferris	D	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
21---------- Garton	C	Rare--------	---	---	2.0-3.0	Perched	Nov-Apr	>60	---	High-----	Low.
22---------- Guyton	D	Occasional	Very brief	Jan-Dec	0-1.5	Apparent	Dec-May	>60	---	High-----	Moderate.
23---------- Heiden	D	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
24, 25---------- Hollywood	D	None--------	---	---	>6.0	---	---	>48	Hard	High-----	Low.
26*: Hollywood--------	D	None--------	---	---	>6.0	---	---	>48	Hard	High-----	Low.
Swink----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	High-----	Low.

See footnote at end of table.

TABLE 18.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
27---------- Hopco	C	Occasional	Brief-----	Dec-May	0.5-1.0	Apparent	Dec-May	>60	---	High-----	Low.
28---------- Idabel	B	Rare--------	Very brief	Mar-Jun	>6.0	---	---	>60	---	Low------	Low.
29---------- Karma	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
30---------- Kaufman	D	Occasional	Brief-----	Nov-May	0-3.5	Apparent	Nov-Apr	>60	---	High-----	Low.
31---------- Kaufman	D	Frequent----	Brief-----	Nov-May	0-3.5	Apparent	Nov-Apr	>60	---	High-----	Low.
32---------- Kiomatia	A	Occasional	Brief-----	Feb-Jun	3.0-5.0	Apparent	Jan-Jul	>60	---	Low------	Low.
33---------- Larue	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
34---------- Latanier	D	Occasional	Brief-----	Nov-Jul	1.0-3.0	Apparent	Dec-Apr	>60	---	High-----	Low.
35---------- Lula	B	None--------	---	---	>6.0	---	---	40-60	Hard	Moderate	Moderate.
36---------- Muskogee	C	None--------	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	High-----	Moderate.
37---------- Newtonia	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
38---------- Oklared	B	Rare--------	Very brief	Mar-Aug	3.0-4.0	Apparent	Mar-May	>60	---	Moderate	Low.
39---------- Panola	D	None--------	---	---	0.5-1.0	Perched	Nov-Apr	>60	---	High-----	Moderate.
40---------- Pledger	D	Rare--------	Brief-----	Mar-Oct	0-2.5	Apparent	Dec-Feb	>60	---	High-----	Low.
41---------- Redlake	D	Occasional	Very brief	Jan-May	>6.0	---	---	>60	---	High-----	Low.
42---------- Roebuck	D	Occasional	Brief-----	Jan-Jul	>6.0	---	---	>60	---	High-----	Low.
43, 44---------- Ruston	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
45---------- Saffell	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
46---------- Severn	B	Rare--------	Very brief	Jan-Oct	>6.0	---	---	>60	---	Low------	Low.
47, 48---------- Smithdale	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
49---------- Speer	C	Rare--------	Very brief	Jan-May	>6.0	---	---	>60	---	Moderate	Moderate.
50*:											
Swink----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	High-----	Low.
Hollywood--------	D	None--------	---	---	>6.0	---	---	>48	Hard	High-----	Low.

See footnote at end of table.

TABLE 18.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
51, 52--Tenaha	B	None	---	---	>6.0	---	---	40-60	Ripable	Moderate	Moderate.
53*: Tenaha	B	None	---	---	>6.0	---	---	40-60	Ripable	Moderate	Moderate.
53*: Kirvin	C	None	---	---	>6.0	---	---	40-60	Ripable	High	High.
54*: Tenaha	B	None	---	---	>6.0	---	---	40-60	Ripable	Moderate	Moderate.
Smithdale	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
55--Trinity	D	Frequent	Brief	Feb-May	0-3.0	Apparent	Nov-Feb	>60	---	High	Low.
56--Tuscumbia	D	Occasional	Brief	Jan-Mar	0.5-1.5	Apparent	Dec-Apr	>60	---	High	Low.
57*. Udorthents											
58, 59--Whakana	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
60*: Wrightsville	D	None	---	---	0.6-1.5	Perched	Dec-Apr	>60	---	High	High.
Elysian	B	None	---	---	3.0-6.0	Perched	Dec-May	>60	---	Moderate	High.

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

TABLE 19.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

Soil name	Family or higher taxonomic class
Alusa	Fine, montmorillonitic, thermic Typic Albaqualfs
Bernow	Fine-loamy, siliceous, thermic Glossic Paleudalfs
*Boggy	Coarse-loamy, siliceous, nonacid, thermic Aeric Fluvaquents
Bosville	Fine, mixed, thermic Albaquic Paleudalfs
*Burleson	Fine, montmorillonitic, thermic Udic Pellusterts
Caspiana	Fine-silty, mixed, thermic Typic Argiudolls
Clebit	Loamy-skeletal, siliceous, thermic Lithic Dystrochrepts
Coushatta	Fine-silty, mixed, thermic Fluventic Eutrochrepts
Dela	Coarse-loamy, siliceous, nonacid, thermic Typic Udifluvents
Durant	Fine, montmorillonitic, thermic Vertic Argiustolls
Elysian	Coarse-loamy, siliceous, thermic Haplic Glossudalfs
Ferris	Fine, montmorillonitic, thermic Udorthentic Chromusterts
Garton	Fine, mixed, thermic Aquic Argiudolls
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Heiden	Fine, montmorillonitic, thermic Udic Chromusterts
Hollywood	Fine, montmorillonitic, thermic Typic Pelluderts
*Hopco	Fine-silty, mixed, thermic Cumulic Haplaquolls
Idabel	Coarse-loamy, mixed, thermic Fluventic Eutrochrepts
Karma	Fine-loamy, mixed, thermic Typic Hapludalfs
Kaufman	Very-fine, montmorillonitic, thermic Typic Pelluderts
Kiomatia	Sandy, mixed, thermic Typic Udifluvents
Kirvin	Clayey, mixed, thermic Typic Hapludults
Larue	Loamy, siliceous, thermic Arenic Paleudalfs
Latanier	Clayey over loamy, mixed, thermic Vertic Hapludolls
Lula	Fine-silty, mixed, thermic Typic Argiudolls
Muskogee	Fine-silty, mixed, thermic Aquic Paleudalfs
Newtonia	Fine-silty, mixed, thermic Typic Paleudolls
Oklared	Coarse-loamy, mixed (calcareous), thermic Typic Udifluvents
Panola	Fine, montmorillonitic, thermic Vertic Ochraqualfs
Pledger	Fine, mixed, thermic Vertic Hapludolls
Redlake	Fine, mixed, thermic Vertic Eutrochrepts
Roebuck	Fine, montmorillonitic, thermic Vertic Hapludolls
Romia	Fine-loamy, siliceous, thermic Ultic Hapludalfs
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Saffell	Loamy-skeletal, siliceous, thermic Typic Hapludults
Severn	Coarse-silty, mixed (calcareous), thermic Typic Udifluvents
Smithdale	Fine-loamy, siliceous, thermic Typic Paleudults
Speer	Fine-loamy, siliceous, thermic Ultic Hapludalfs
Swink	Clayey-skeletal, montmorillonitic, thermic Lithic Hapludolls
Tenaha	Loamy, siliceous, thermic Arenic Hapludults
Trinity	Very-fine, montmorillonitic, thermic Typic Pelluderts
Tuscumbia	Fine, mixed, nonacid, thermic Vertic Haplaquepts
*Tuskahoma	Clayey, mixed, thermic, shallow Albaquic Hapludalfs
Udorthents	Udorthents
Whakana	Fine-loamy, mixed, thermic Glossic Paleudalfs
Wrightsville	Fine, mixed, thermic Typic Glossaqualfs

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