Major fieldwork for this soil survey was done in the period 1957–64. Soil names and descriptions were approved in 1965. Unless otherwise indicated, statements in the publication refer to conditions in the parish in 1964. This survey was made cooperatively by the [redacted] tion Service and the Louisiana Agricultural Experiment Station. The surve[redacted]

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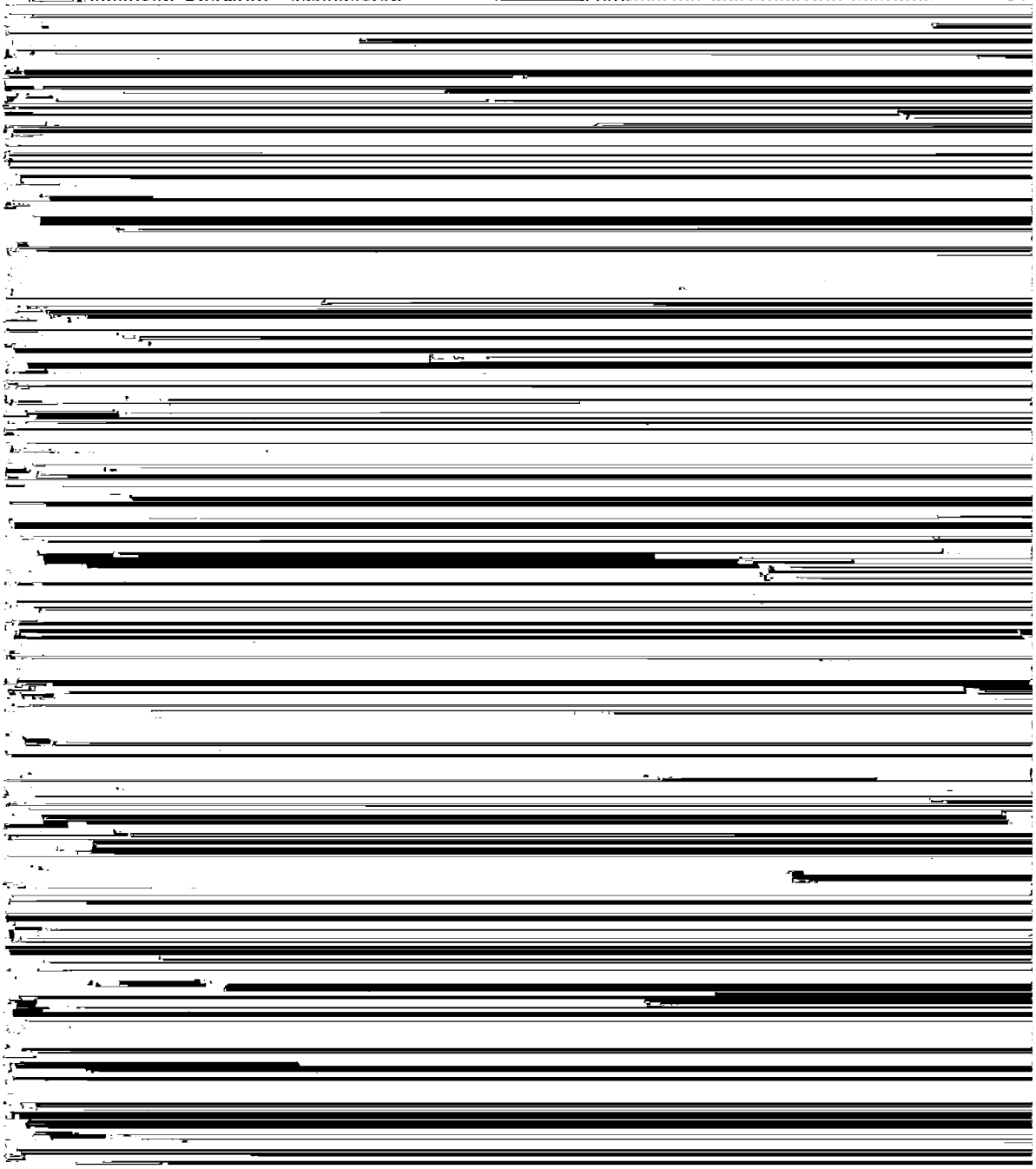

SOIL SURVEY OF TENSAS PARISH, LOUISIANA

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE LOUISIANA AGRICULTURAL EXPERIMENT STATION

TENSAS PARISH is in the northeastern part of Louisiana (fig. 1). It has a total area of 413,440 acres, of which 20,805 acres are lakes, bayous, and rivers. The northern part of the parish is drained by Bayou Vidal; the central part by Bieler and Clark Bayous and the Big and Little Choctaw Bayous; and the western part by the Tensas River. St. Joseph, the parish seat, is in the southern part of the parish. The climate is warm and temperate. Summers are hot and humid. Winters are mild.

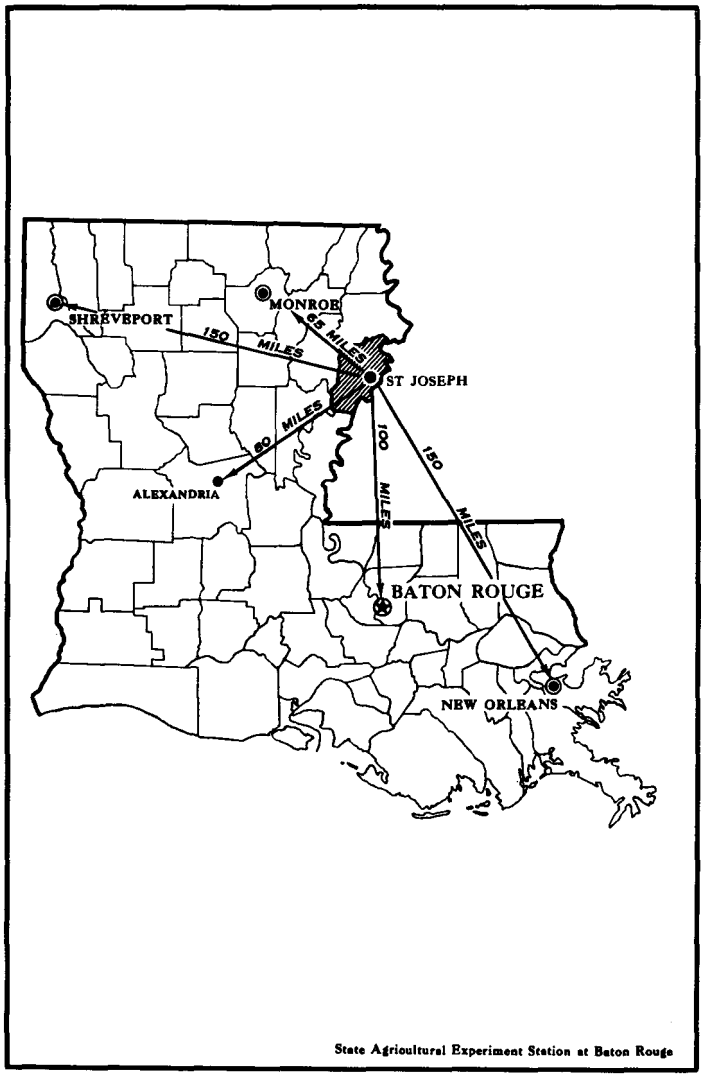


Figure 1.—Location of Tensas Parish in Louisiana.

The soils formed in alluvium deposited by the Mississippi River and range from loamy sand to clay in texture. They are level to undulating. Most of the parish is undulating.

Tensas Parish is mainly a farming area. For many years the main crops have been cotton, corn, soybeans, and small grain. Pecans are grown as a supplemental source of income, but few truck crops or other specialty crops are grown. In recent years the parish has become one of the leaders in beef cattle production; practically every plantation has a high-grade herd. About 62 percent of the parish is hardwood forest. Each year part of the woodland acreage is cleared for crops and pasture.

The parish supports one of the largest populations of white-tailed deer in the State, and much of the woodland is leased by hunting clubs. Lake Bruin and Lake St. Joseph offer many opportunities for boating, fishing, and other aquatic sports. Areas bordering the lakes are being developed for these purposes.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soils are in Tensas Parish, where they are located, and how they can be used.

They went into the parish knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the parish, they observed steepness, length, and shape of slopes; size of streams; kinds of native plants or crops; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in parishes nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. To use this publication efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, the major horizons of all the soils of one series are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Commerce and Sharkey, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the natural, undisturbed landscape. Soils of one series can differ somewhat in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man.

Many soil series contain soils that differ in the texture of their surface layer. According to such differences in texture, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. Commerce silt loam and Commerce silty clay loam are two soil types in the Commerce series. The difference in the texture of their surface layers is apparent from their names.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting

In most areas surveyed there are tracts in which the soil material is so rocky, so shallow, or so frequently worked by wind or water that it cannot be classified by soil series. These tracts are shown on the soil map like other mapping units, but they are given descriptive names and are called land types rather than soils. In this parish, for example, soil affected by salt water and by oily liquids from oil and gas wells is called "Oil-waste land."

While a soil survey is in progress, samples of soil are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soils in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field and plot experiments on the same kinds of soils. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way that it is readily useful to different groups of readers, among them farmers, ranchers, managers of woodland, engineers, and homeowners. Grouping soils that are similar in suitability for each specified use

the swales, are slightly rounded, and are 100 to 400 feet wide. This association makes up 25 percent of the parish.

Tensas soils, which make up about 50 percent of the association, are on the crests and the upper slopes of the ridges. Their uppermost layers are clay and silty clay loam. At a depth of 15 to 30 inches are layers of slightly acid to very strongly acid silt loam, very fine sandy loam, or silty clay loam.

Alligator soils, which make up about 30 percent of the association, are on the lower slopes of the ridges and in the swales. They are poorly drained clays that are very slowly permeable to a depth of 42 inches or more and are medium acid to very strongly acid.

Also included in this association are minor areas of Dundee soils, which are on the crests of the ridges, and [illegible] of Sharkey soils, which are in the swales.

make up about 75 percent of this association, are in depressions. Crevasse fine sand makes up about 13 percent of the association, and Loamy alluvial land about 12 percent. Also included are spots of Robinsonville very fine sandy loam.

Most of this association is woodland. The rest is used for pasture and hay.

4. Newellton-Sharkey association

Clayey, alkaline soils on ridges and in swales

This association is characterized by low ridges and swales that formed in clay deposited by the meandering Mississippi River. The swales are long and 20 to 200 feet wide. The ridges are 1 to 5 feet higher than the swales and are 100 to 300 feet wide. This association makes up about 4 percent of the parish. Most of it is in the northeastern

meable. Their surface layer and subsoil are slightly acid or neutral very fine sandy loam.

This association also includes minor areas of Mhoon, Newellton, Tunica, and Sharkey soils.

This association contains some of the most productive soils in the parish. About 96 percent of it is used for cultivated crops and pasture. Cotton, corn, soybeans, wheat, oats, and pasture grasses are the main crops. Most of the farms are 300 acres or more in size. The main sources of income are cultivated crops and beef cattle.

6. *Tensas-Dundee-Alligator association*

Clayey and loamy soils along natural levees

This association is characterized by natural levees, ridges, and swales that formed in clayey and silty material deposited by the meandering Mississippi River. Most of it occurs along the natural levees of the Choctaw, Muddy, and Van Buren Bayous in the southern part of the parish. This association makes up about 12 percent of the parish.

Tensas soils, which make up about 40 percent of the association, are on the lower parts of the natural levees and on the ridges. They are poorly drained, very slowly permeable, and slightly acid to very strongly acid. Their surface layer is clay, silty clay, or silty clay loam, and their subsoil is clay. These soils are underlain by loamy material at a depth of 15 to 30 inches.

Dundee soils, which make up about 30 percent of the association, are on the higher parts of the natural levees and on the crests of the ridges. They are somewhat poorly drained. Their surface layer is silt loam or silty clay loam, and their subsoil is slightly acid to very strongly acid, moderately slowly permeable clay loam.

Alligator soils, which make up about 20 percent of the association, are on broad, level areas and in the swales. They are clay to a depth of 42 inches or more, are poorly drained, and are very slowly permeable. The texture of the surface layer ranges from silt loam to clay.

Also included in this association are small areas of Sharkey and Goldman soils.

Most of this association is used for cultivated crops and pasture. Soybeans, wheat, oats, cotton, and corn are the main crops. The farms range from small units operated by the family to large plantations. The main sources of income are cultivated crops, beef cattle, and dairy products.

7. *Goldman-Dundee-Sharkey association*

Clayey soils on ridges and in swales

This association is characterized by ridges and swales that formed in clayey material deposited by the meandering Mississippi River. Most of it occurs along the natural levees of the Choctaw, Muddy, and Van Buren Bayous in the southern part of the parish. This association makes up about 12 percent of the parish.

Goldman soils, which make up about 40 percent of the association, are on the lower parts of the natural levees and on the ridges. They are poorly drained, very slowly permeable, and slightly acid to very strongly acid. The uppermost layers are clay or silty clay loam. These soils are underlain by loamy material at a depth of 15 to 30 inches.

Goldman soils, which make up about 20 percent of the association, are on the crests and the uppermost slopes of the ridges. They are moderately well drained and moderately rapidly permeable. Their surface layer is very fine sandy loam, and the subsoil is medium acid to very strongly acid loam. These soils are more droughty than Dundee and Tensas soils.

Also included in this association are small areas of Alligator and Sharkey soils, which are in the swales.

About 80 percent of this association is used for cultivated crops and pasture. Cotton, soybeans, wheat, oats, and pasture grasses are the main crops. The farms range in size from small units operated by the family to large plantations. About 15 percent of the association is woodland.

8. *Sharkey-Alligator-Tunica association*

Clayey soils in broad, level areas

This association is characterized by broad, low, level areas on the flood plain, where floodwater moved very slowly and deposited fine sediments, mainly clay. The larger areas are 1 to 6 miles wide and 3 to 12 miles long. This association occurs throughout the parish. It makes up 35 percent of the parish.

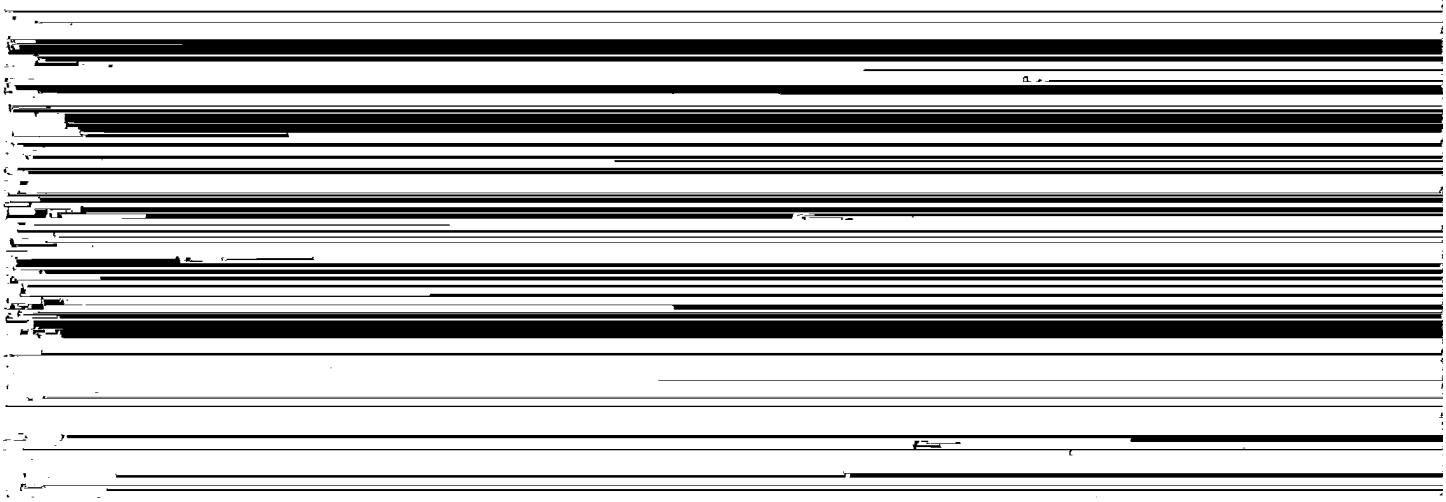
Sharkey clay, which makes up about 65 percent of the association, is dark gray and poorly drained. Its subsoil is very slowly permeable, slightly acid to moderately alkaline clay.

Alligator clay, which makes up 20 percent of the association, is gray and poorly drained. Its subsoil is very slowly permeable, medium acid to very strongly acid clay.

Tunica clay, which makes up 10 percent of the association, is dark gray, poorly drained, and slowly permeable. It is underlain by loamy material at a depth of 20 to 30 inches.

Also included in this association are small areas of Dundee and Tensas soils.

Most of this association is woodland. The rest is used for cultivated crops and pasture. Cotton, soybeans, rice, and pasture grasses are the main crops. The farms range from small units operated by the family to large plantations.



Commerce soils, which make up 25 percent of the association, are on the crests of the ridges and are somewhat poorly drained.

Tunica soils, which make up 20 percent of the association, are on the lower slopes of the ridges and in the swales. They are similar to Newellton soils, except that they are poorly drained and have loamy material at a depth of 20 to 30 inches.

Also included in this association are areas of Bruin and Robinsonville soils, which are on the crests of the ridges, and Sharkey soils, which are in the swales.

Most of this association is used for cultivated crops and pasture. Cotton, soybeans, corn, wheat, oats, and pasture grasses are the main crops. A large part of the association is in farms of 300 acres or more. Most farms are operated by the owner. The main sources of income are cultivated crops, beef cattle, and sheep.

Descriptions of the Soils

This section describes the soil series and mapping units of Tensas Parish. The approximate acreage and the proportionate extent of each mapping unit are given in table 1.

A general description of each soil series is given, and this is followed by brief descriptions of the mapping units in that series. Thus, for full information on any one mapping unit, it is necessary to read the description of the soil series as well as the description of the mapping unit.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of the description of each mapping unit are the capability unit, the woodland group, and the wildlife group in which the mapping unit has been placed. The page on which each capability unit is described can be found readily by referring to the "Guide to Mapping Units." The woodland and wildlife classifications for each soil can also be found by referring to the "Guide to Mapping Units." The woodland and wildlife groups are described in tables 3 and 7 in the sections "Woodland" and "Wildlife." Many terms used in the soil descriptions and other sections of the publication are defined in the Glossary.

Alligator Series

Soils of the Alligator series are poorly drained (fig. 2). They formed in fine-textured alluvium deposited by the Mississippi River. They occur in low areas in the western part of the parish. Typically, the surface layer is dark-gray clay. It is underlain by several feet of gray clay mottled with yellowish brown and strong brown.

Alligator soils are associated with Dundee, Tensas, and Sharkey soils. They are more poorly drained and finer textured than Dundee soils. They lack the layers of silt loam, very fine sandy loam, or silty clay loam that are typical of Tensas soils. They are lighter colored and more acid than Sharkey soils.

The following profile of Alligator clay is on a broad flat 50 feet north of State Highway 566 and 6 miles west of Waterproof, SW¼NE¼ sec. 31, T. 10 N., R. 10 E.

A11—0 to 1 inch, very dark gray (10YR 3/1) silty clay; weak, fine, granular structure; firm; many fine roots; few partially decayed leaves; very strongly acid; gradual, smooth boundary.

A12—1 to 6 inches, gray (10YR 5/1) clay; common, fine, faint, dark yellowish-brown (10YR 4/4) mottles and few, fine, distinct, yellowish-brown (10YR 5/6) mottles; moderate, medium, subangular blockly structure; firm;

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Alligator clay, 0 to 1 percent slopes	30, 554	7. 4	Newellton clay, 0 to 1 percent slopes	2, 748	. 7
Alligator clay, gently undulating	2, 700	. 7	Newellton silty clay loam, 1 to 3 percent slopes	407	. 1
Alligator clay, undulating	583	. 1	Newellton clay, 1 to 5 percent slopes	1, 612	. 4
Bruin silt loam, 0 to 1 percent slopes	6, 557	1. 6	Newellton-Mhoon silty clay loams, gently undulating	1, 522	. 4
Bruin silt loam, 1 to 3 percent slopes	803	. 2	Newellton-Commerce-Tunica complex, undulating	3, 505	. 8
Bruin-Mhoon complex, gently undulating	5, 234	1. 3	Newellton-Sharkey clays, undulating	14, 693	3. 6
Bruin-Robinsonville-Crevasse complex, undulating	1, 014	. 2	Oil-waste land	506	. 1
Clayey alluvial land and Sharkey clay, overflow, 0 to 5 percent slopes	29, 080	7. 0	Robinsonville very fine sandy loam, 1 to 5 percent slopes	405	. 1
Commerce silt loam, 0 to 1 percent slopes	10, 000	2. 4			

Figure 2.—**Water standing on Alligator clay after heavy rain.**

The A horizon is silty clay or clay in texture. It ranges from very dark gray (10YR 3/1) to gray (10YR 5/1) in color, from very strongly acid to slightly acid or neutral in reaction, and from 3 to 6 inches in thickness. The very dark gray (10YR 3/1) layer is less than 3 inches thick. The AC horizon is silty clay or clay. It is gray (10YR 5/1) and is mottled dominantly with dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/6), and grayish brown (10YR 5/2). It ranges from very strongly acid to medium acid in reaction. The C horizon is dominantly gray (10YR 5/1) in color but in places contains layers of dark gray (10YR 4/1). It ranges from very strongly acid to medium acid to a depth of 42 inches and from medium acid to moderately alkaline below that depth. This horizon is silty clay or clay in texture. Mottles are dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6). Slickensides are present but are difficult to identify if the soil is wet.

Alligator clay, 0 to 1 percent slopes (AcA).—This soil is poorly drained. It occurs mainly on wide flats and in narrow depressions, at some of the lowest elevations in the parish. The surface layer is ordinarily dark gray and is approximately 6 inches thick. It is underlain by gray silty clay or clay mottled with yellowish brown and dark yellowish brown. Included in mapping were areas less than 50 feet wide of very dark gray clay, areas where the slope is up to 3 percent, and small areas of Sharkey clay and Tensas silty clay.

This soil can be worked within only a narrow range of moisture content. It cracks when dry and seals over when wet. It becomes cloddy when worked, and seedbed preparation is difficult. The soil is low in nitrogen and low to moderate in phosphorus and potassium. It is very strongly acid to medium acid in the root zone. Runoff is medium, and permeability is very slow. The available water capacity is moderate.

This soil can be used for most of the common crops, but it is not well suited to cotton, corn, and Coastal bermudagrass. Most of the acreage is woodland. The rest is in

many fine roots; few very fine pores in peds; very

the acreage is used for cultivated crops and pasture. (Capability unit IIIw–5; woodland group 6; wildlife group 4)

Alligator clay, undulating (AgD).—This soil is gray clay or silty clay to a depth of 42 inches or more. It occupies parallel ridges and swales, mainly in the northeastern and southwestern parts of the parish. The swales, which make up about 40 percent of the acreage, are wet, or in some years they are covered with water during winter and early in spring. They are typically less than 150 feet wide. The ridges, which make up about 60 percent of the acreage, are 3 to 8 feet high and are somewhat better drained than the swales. Few of these are more than 250 feet wide. Included in mapping were small areas of Sharkey clay in the swales, and areas of Dundee silty clay loam and Tensas clay on some of the highest ridges.

The soil texture, the wetness, and the irregular slopes make management difficult. This soil cracks when dry and seals over when wet. It can be worked within only a narrow range of moisture content. It becomes cloddy when

angular blocky structure; friable; many fine roots; slightly acid; gradual, smooth boundary.

B2—10 to 18 inches, dark-brown (10YR 4/3), gritty silt loam; common, fine, faint, dark grayish-brown (10YR 4/2) mottles and few, fine, faint, grayish-brown (10YR 5/2) mottles; moderate, medium, subangular blocky structure; friable; few fine pores in peds; many fine roots; slightly acid; abrupt, smooth boundary.

B3—18 to 24 inches, dark-brown (10YR 4/3), gritty silt loam; common, fine, faint, dark grayish-brown (10YR 4/2) and grayish-brown (10YR 5/2) mottles; few, fine, faint, yellowish-brown (10YR 5/4) mottles in lower part of horizon; weak, medium, subangular blocky structure; friable; many fine pores in peds; few fine roots; slightly acid; gradual, smooth boundary.

C1—24 to 34 inches, brown (10YR 5/3), gritty silt loam; common, fine, faint, grayish-brown (10YR 5/2) and dark grayish-brown (10YR 4/2) mottles; weak, very fine, platy structure in upper part and weak, coarse, platy structure in lower part; friable; few fine pores in peds; few fine roots; slightly acid; abrupt, smooth boundary.

C2—34 to 46 inches, brown (10YR 5/3) very fine sandy loam; common, fine, faint, light brownish-gray (10YR 6/2), dark yellowish-brown (10YR 4/4), and yellowish

This is one of the most productive soils in the parish. It is well suited to most of the common crops. A plowpan frequently forms when the soil is cultivated. Control of runoff is needed in some areas to keep excess water from collecting in nearby depressions. Practically all of the acreage is used for cultivated crops. (Capability unit I–1; woodland group 1; wildlife group 2)

Bruin silt loam, 1 to 3 percent slopes (BaB).—This soil is moderately well drained. It occupies low narrow ridges, few of which are more than 250 feet wide. Slopes are short. The surface layer is dark grayish brown and is about 8 inches thick. It is underlain by brown or dark-brown silt loam mottled with grayish brown and yellowish brown. Included in mapping were small areas of well-drained Robinsonville very fine sandy loam and somewhat poorly drained Commerce silt loam, and small areas of soils that are medium acid in the surface layer. Also included were a few narrow ridges where the slope is 3 to 5 percent.

This soil is easy to work. It can be cultivated throughout a wide range of moisture content. It is slightly acid or neutral in the uppermost 20 inches and becomes moderately alkaline below that depth. It is low in nitrogen and medium to high in phosphorus and potassium. Runoff is medium, and permeability is moderate. The available water capacity is high.

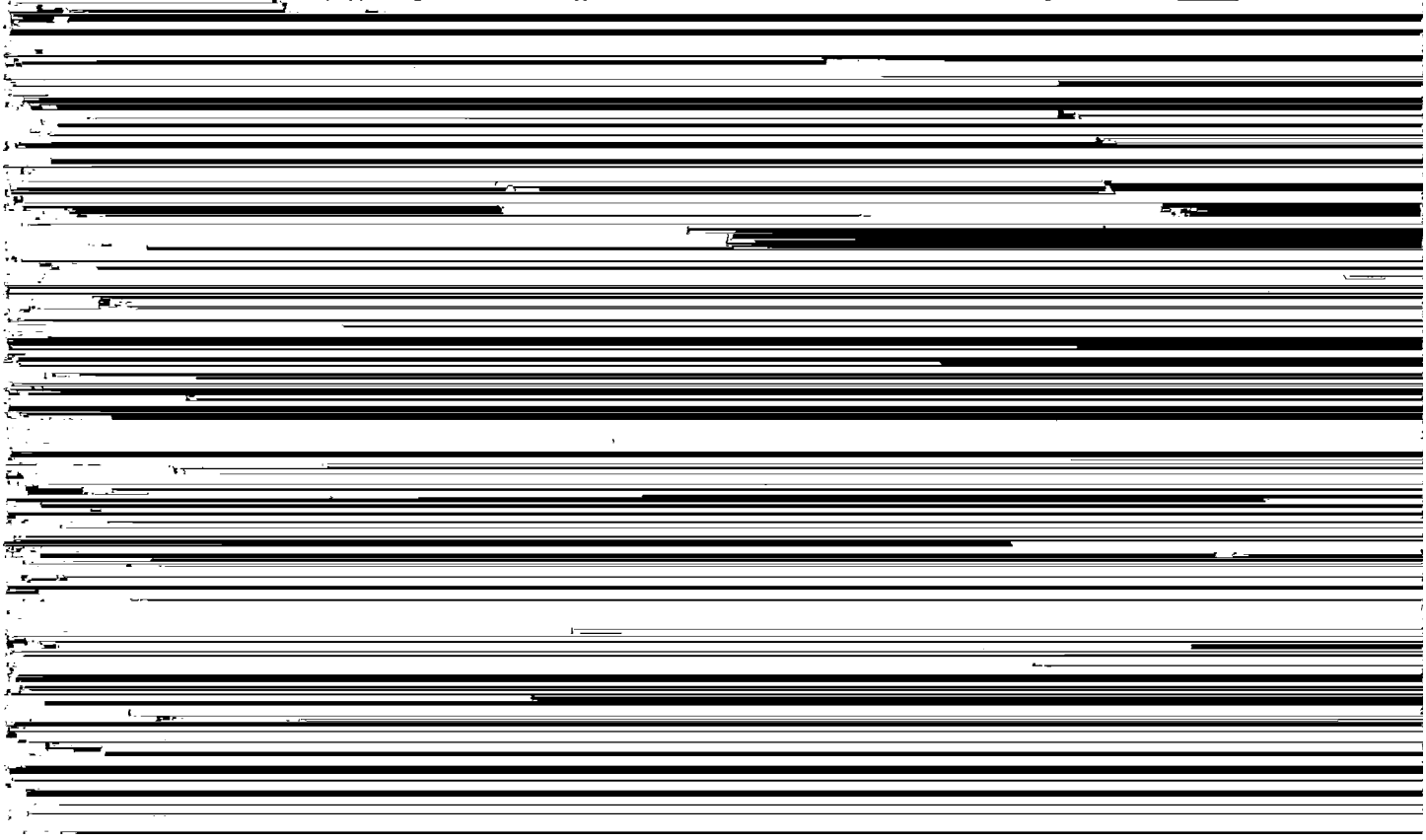
This soil is well suited to most of the common crops. A plowpan frequently forms when the soil is cultivated. Most of the acreage is used for cultivated crops and pasture. Planting crops in rows across the slope helps to control runoff and reduces the hazard of erosion. (Capability unit IIe–1; woodland group 1; wildlife group 2)

Bruin-Mhoon complex, gently undulating (BmB).—

Bruin-Robinsonville-Crevasse complex, undulating (BrC).—These soils are on the natural levees adjacent to Lake Bruin. They occupy low parallel ridges and swales. The ridges are 2 to 5 feet high. The moderately well drained Bruin soils, which make up about 50 percent of the complex, are on the uppermost slopes of the ridges and in the swales. Robinsonville soils, which make up about 35 percent of the complex, are predominantly on the crests and upper slopes of the ridges and are well drained. They are described under the heading "Robinsonville Series." The Crevasse soils, which make up about 15 percent of the complex, occur as small areas on the crests of some of the ridges and are excessively drained. They are described under the heading "Crevasse Series." Included in mapping were small areas of Mhoon and Sharkey soils in the swales and small areas of soils that are medium acid in the surface layer.

The short irregular slopes and variable texture make management somewhat difficult. These soils can be cultivated throughout a wide range of moisture content. They are slightly acid or neutral in the surface layer and become moderately alkaline with increasing depth. They are low in nitrogen and moderate to high in phosphorus and potassium. Bruin and Robinsonville soils have medium runoff, moderate permeability, and high available water capacity. Crevasse soils have slow runoff, rapid permeability, and low available water capacity.

Bruin and Robinsonville soils are well suited to most of the common crops. Droughtiness limits crop production on Crevasse soils, and the irregular slopes interfere with cultivation. A plowpan frequently forms when these soils are cultivated. Controlling erosion is a problem on the



other 10 percent is made up of small areas of silty and sandy land.

This soil material is slightly acid to moderately alkaline in the surface layer and is mildly alkaline to moderately alkaline at a depth of more than 20 inches. Runoff and permeability are very slow.

The hazard of overflow makes this soil material unsuitable for cultivation and limits its suitability as woodland and pasture. Most of the acreage is woodland. Cleared areas are used for pasture. (Capability unit Vw–2; woodland group 3; wildlife group 6)

Commerce Series

Soils of the Commerce series are somewhat poorly drained. They formed in silty sediments deposited by the Mississippi River. They occur on the lower parts of the natural levees along Lake Bruin, Lake St. Joseph, and the Mississippi River.

Commerce soils are associated with Bruin, Mhoon, Sharkey, and Tunica soils. They are more poorly drained and at a lower elevation than Bruin soils. Commerce soils are coarser textured, better drained, and at a higher elevation than the adjacent Mhoon, Newellton, Sharkey, and Tunica soils.

The surface layer is dark grayish-brown silt loam. The subsoil is dark grayish-brown, light silty clay loam. It is underlain by grayish-brown silt loam.

The following profile of Commerce silt loam is in a cultivated field on the Northeast Louisiana Agricultural Experiment Station, 1,050 feet east of old U.S. Highway

C2—36 to 44 inches, grayish-brown (10YR 5/2) silt loam; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; finely banded, faint color striations 1 to 2 millimeters thick are evident throughout; massive with some horizontal cleavage; friable; few fine pores; few, fine, soft, dark-brown aggregates; moderately alkaline; noncalcareous; gradual, smooth boundary.

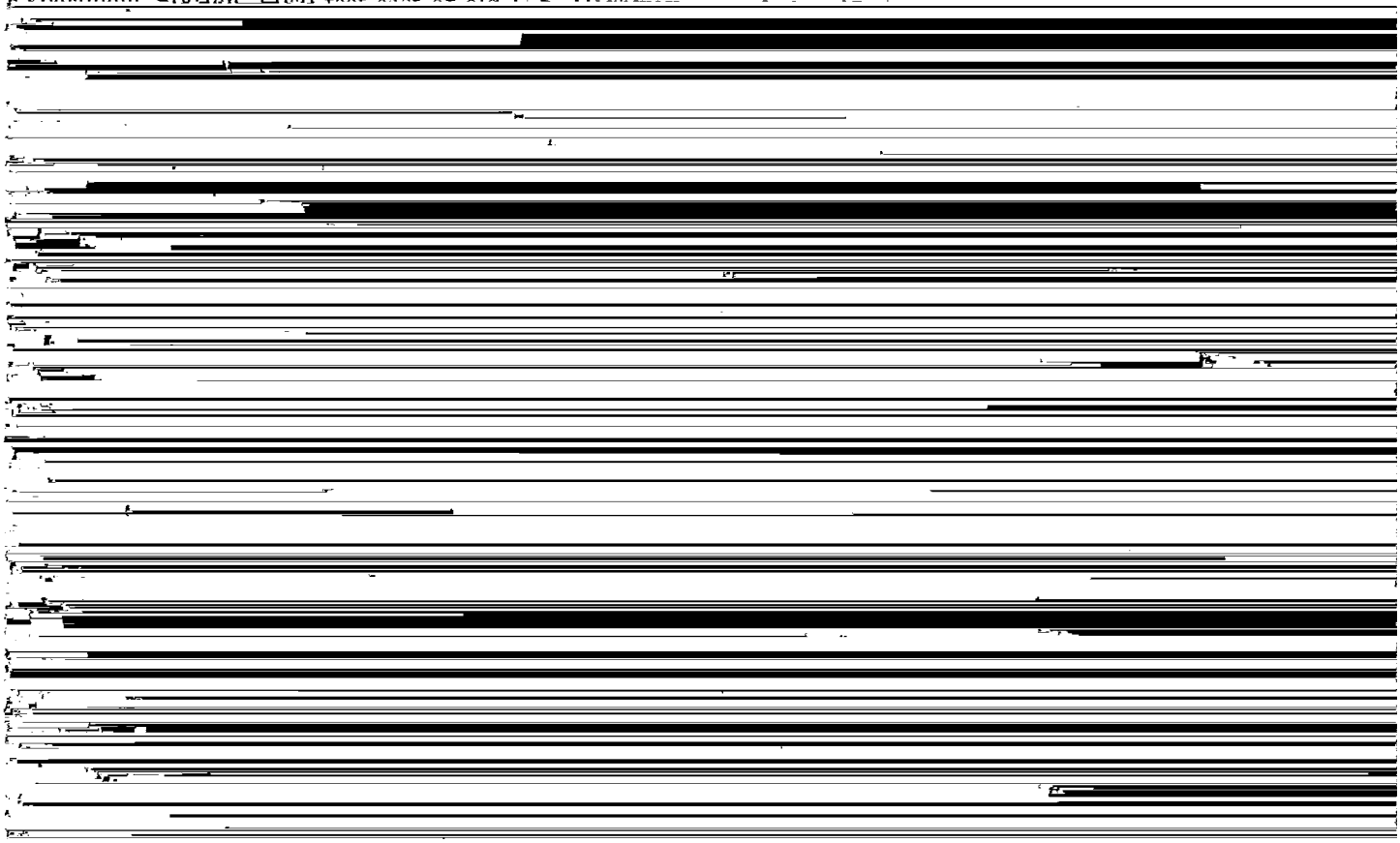
C3—44 to 54 inches, grayish-brown (10YR 5/2) coarse silt loam; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; finely banded, faint color striations 1 to 2 millimeters thick are evident throughout; massive with some horizontal cleavage; friable; few, fine, soft, dark-brown aggregates; moderately alkaline; noncalcareous; abrupt, smooth boundary.

A1b2—54 to 60 inches, dark-gray (10YR 4/1) silty clay; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, medium, subangular blocky structure; firm; few fine pores in peds; few, soft, dark-brown aggregates; moderately alkaline; noncalcareous; abrupt, wavy boundary.

C4—60 to 62 inches, grayish-brown (10YR 5/2) coarse silt loam; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; massive; friable; few fine pores; few, soft, dark-brown aggregates; mildly alkaline; noncalcareous; abrupt, smooth boundary.

A1b3—62 to 70 inches, dark-gray (10YR 4/1) medium silty clay loam; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, fine, subangular blocky structure; firm; a few pores in peds; moderately alkaline; noncalcareous.

The A horizon ranges from dark grayish brown (10YR 4/2) to dark brown (10YR 4/3) in color, from medium acid to neutral in reaction, from 5 to 12 inches in thickness, and from silt loam to silty clay loam in texture. The B horizon ranges from very dark grayish brown (10YR 3/2) to dark grayish brown (10YR 4/2) in color, from slightly acid to mildly alkaline in reaction, from 4 to 14 inches in thickness, and from silty clay loam to heavy loam in texture. Mottles are dominantly



Commerce silt loam, 1 to 3 percent slopes (CmB).—This soil is somewhat poorly drained. It is on the natural levees along Lake Bruin, Lake St. Joseph, and the Mississippi River and occupies low narrow ridges and areas that slope toward the lakes. The surface layer is dark grayish brown and is about 8 inches thick. It is underlain by dark grayish-brown silty clay loam. Below this is silt loam, [illegible]

The irregular slopes and wetness in the swales make management somewhat difficult. This soil is fairly easy to cultivate but is likely to become cloddy when worked. It is medium acid to neutral in the uppermost 20 inches and neutral to moderately alkaline below this depth. It is low in nitrogen and moderate to high in phosphorus and potassium. Runoff is medium on the ridges and slow in the [illegible]

This soil is fairly easy to till, but it dries out quickly after rains. It is slightly acid or neutral in the surface layer and becomes moderately alkaline with increasing depth. It is low in nitrogen and moderate in phosphorus and potassium. Runoff is slow, and permeability is rapid. The available water capacity is low. Poor traction in the loose, dry sand makes the operation of farm equipment difficult.

This soil is not well suited to many crops. Most of the acreage is woodland. (Capability unit IVs–1; woodland group 5; wildlife group 1)

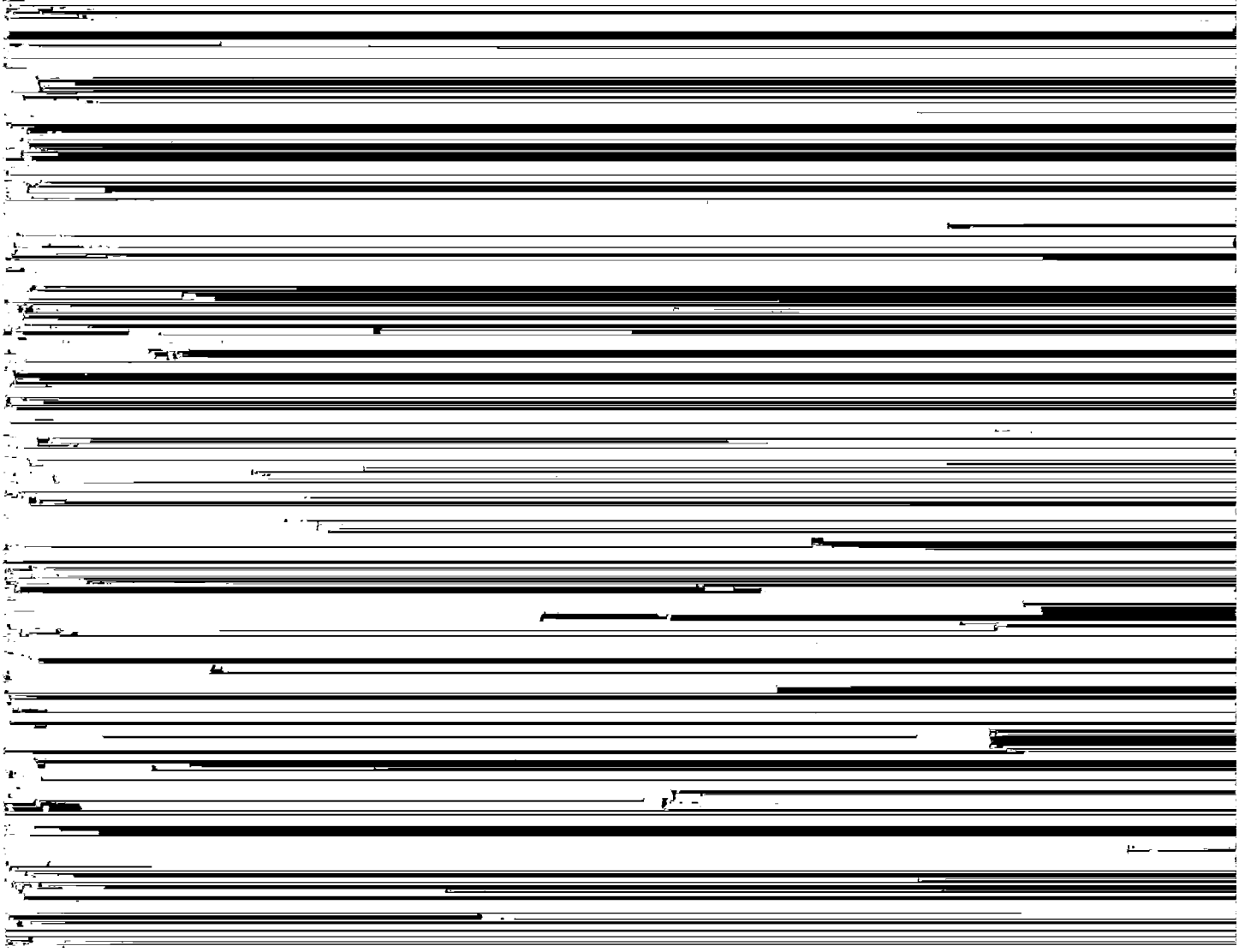
Crevasse fine sand, overflow, 0 to 8 percent slopes (CsD).—This soil is subject to overflow. It receives deposition, loses soil material by scouring, and is likely to be destroyed by bank cutting as the Mississippi River shifts positions. Part of the acreage is adjacent to the Mississippi River, and the rest is in areas east of the Mississippi River. The surface layer is light yellowish brown and is about 5 inches thick. It is underlain by layers of yellowish-brown and pale-brown fine sand and loamy sand that extend to a depth of more than 42 inches. Included in mapping were small areas of Robinsonville, Bruin, and Commerce soils

and medium, subangular blocky structure adhering as weak, medium, prismatic; firm; distinct clay films in pores and on 60 percent of vertical and horizontal ped surfaces; few roots; common fine pores in peds; common, fine, dark-brown aggregates; very strongly acid; clear, smooth boundary.

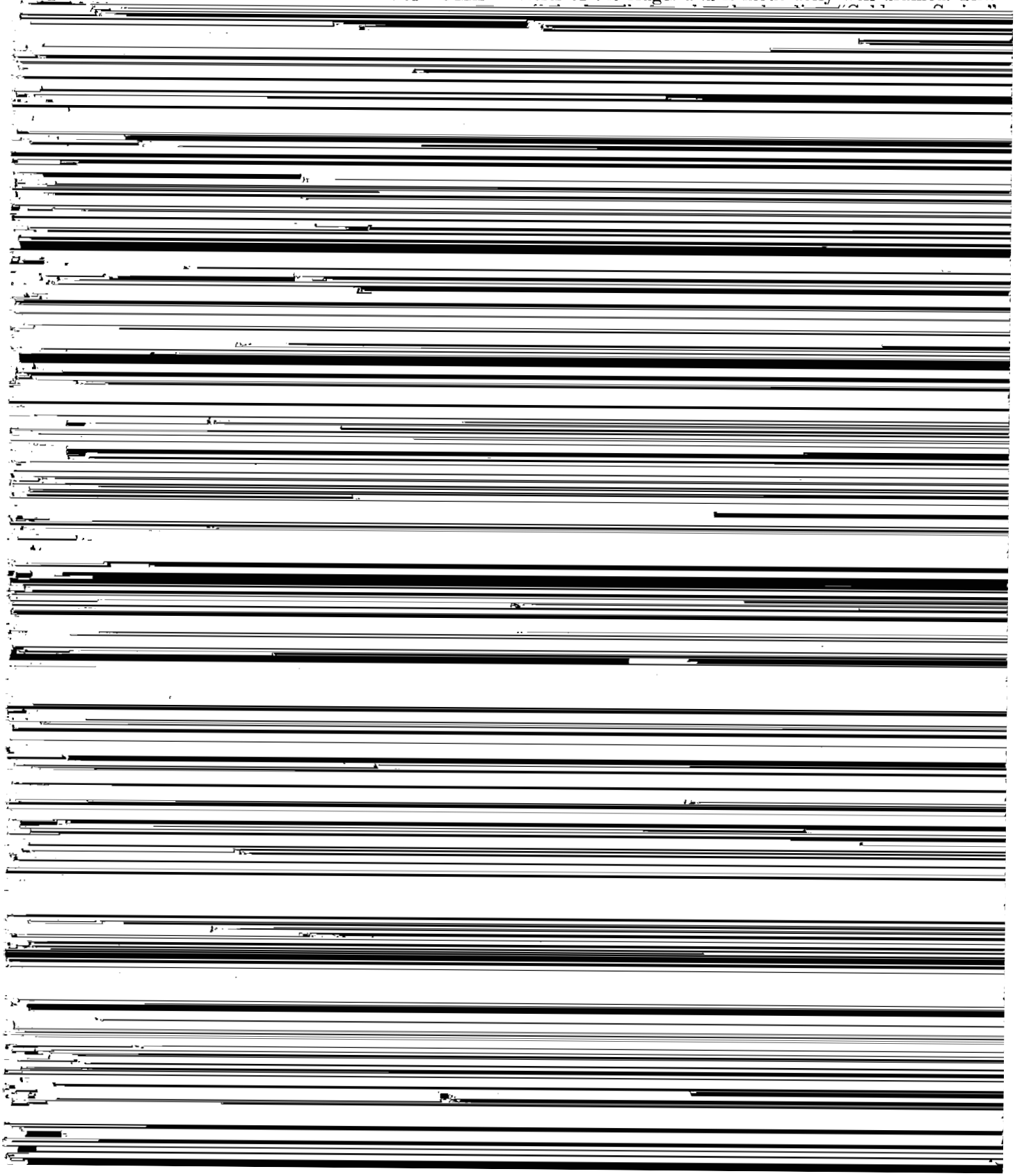
B22t—15 to 23 inches, loam; 60 percent very dark grayish brown (10YR 3/2) and 40 percent dark grayish brown (10YR 4/2) on ped surfaces; dark grayish brown (10YR 4/2) with common, fine, distinct, dark yellowish-brown (10YR 4/4) and grayish-brown (10YR 5/2) mottles inside peds; moderate, medium, subangular blocky structure adhering as weak, medium, prismatic; firm; distinct clay films in most pores and patchy clay films on 50 percent of ped surfaces; a few roots; common fine pores in peds; common, soft, dark-brown aggregates; very strongly acid; clear, smooth boundary.

B3t—23 to 30 inches, loam; dark grayish brown (10YR 4/2) on ped surfaces; grayish brown (10YR 5/2) with common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles inside peds; weak, coarse, subangular blocky structure adhering as weak, medium, prismatic; firm; distinct patchy clay films on 15 percent of ped surfaces; very few roots; few fine pores in peds; very few dark-brown aggregates; very strongly acid; clear, smooth boundary.

C1—30 to 41 inches, grayish-brown (10YR 5/2) very fine sandy



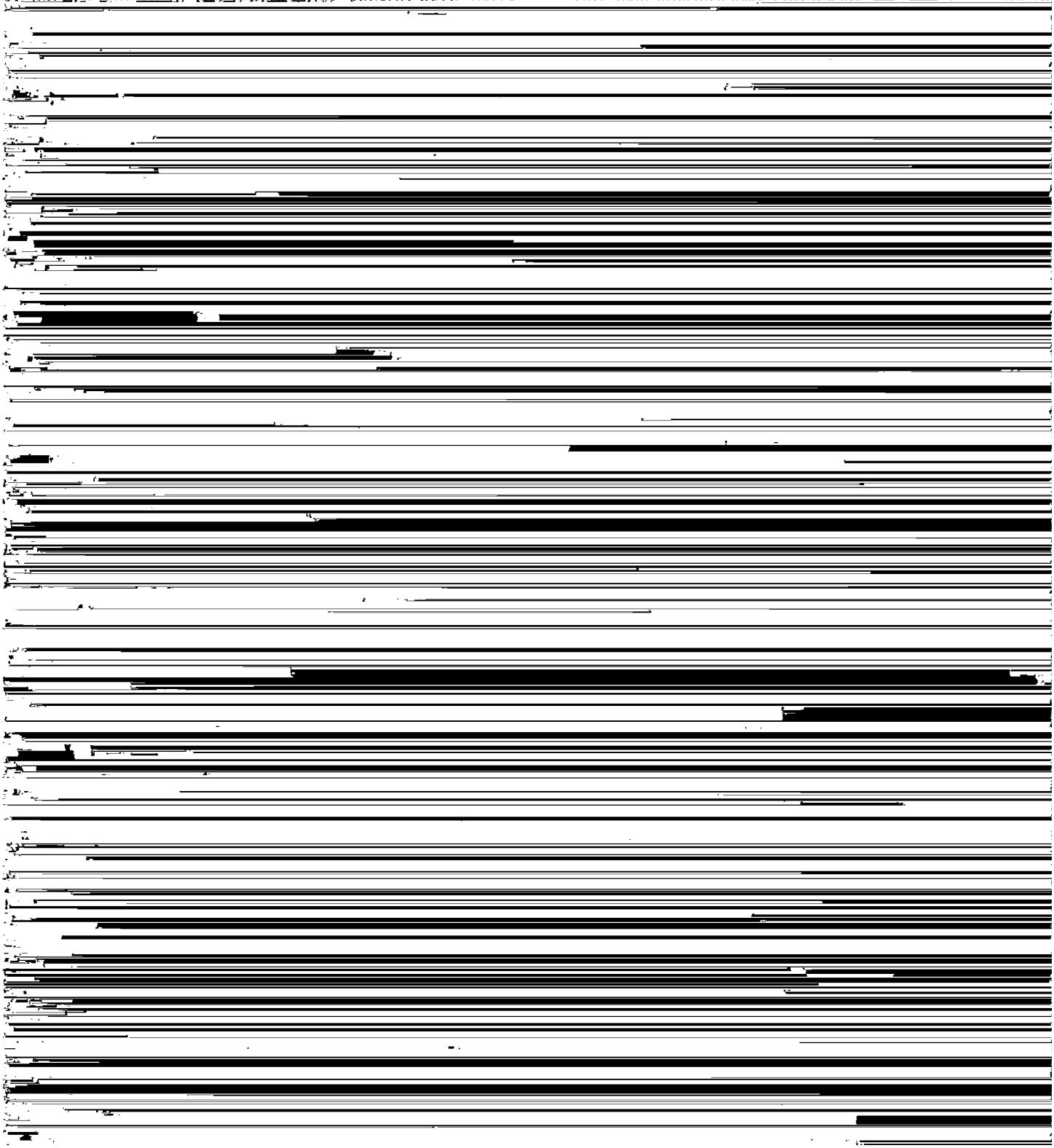
along the natural levees of abandoned channels of the Mis- crests of the ridges and is moderately well drained. This



Goldman Series

Soils of the Goldman series are moderately well drained and moderately permeable. They formed in old alluvium deposited by the Mississippi River. They occur on the crests of narrow ridges in the central and southwestern parts

4/4) in color and ranges from heavy loam to fine sandy loam in texture. The C horizon is yellowish brown (10YR 5/4), dark brown (10YR 4/3), brown (10YR 5/3), and dark grayish brown (10YR 4/2). It ranges from very fine sandy loam to loamy fine sand in texture. Mottles in the B and C horizons are dark yellowish brown (10YR 4/4), dark brown (10YR



of old U.S. Highway 65 in SW¼NW¼ sec. 35, T. 11 N., R. 12 E. (almost on quarter section line).

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) silty clay loam; weak, coarse, subangular blocky structure; firm; abrupt, smooth boundary; slightly acid.

C1—6 to 11 inches, dark-gray (10YR 4/1) silty clay loam; common, medium, distinct, dark-brown (7.5YR 4/4) mottles; massive; firm; medium pockets of pale-brown (10YR 6/3) silt loam; gradual, smooth boundary; moderately alkaline.

C2—11 to 19 inches, dark-gray (10YR 4/1) silty clay loam; common, fine, distinct, dark-brown (7.5YR 4/2) mottles; moderate, medium, subangular blocky structure; firm; gradual, smooth boundary; moderately alkaline.

C3—19 to 29 inches, gray (10YR 5/1) silty clay; common, medium, distinct, dark-brown (7.5YR 4/4) mottles; strong, fine, angular blocky structure; firm; gradual, smooth boundary; moderately alkaline.

C4—29 to 42 inches, gray (10YR 5/1) silty clay loam; common, medium, distinct, dark-brown (7.5YR 4/4) mottles; moderate, medium, subangular blocky structure; firm; moderately alkaline.

The A horizon ranges from dark grayish brown (10YR 4/2) to dark gray (10YR 4/1) in color, from silt loam to silty clay loam in texture, and from 4 to 10 inches in thickness. It is slightly acid or neutral in reaction. The C horizon is dominantly dark gray (10YR 4/1) but ranges from grayish brown (10YR 5/2) to gray (10YR 5/1) at a depth below 20 inches. In the uppermost 20 inches the insides of the peds are dark gray-

This soil is fairly easy to cultivate but is likely to become cloddy when worked. It is slightly acid or neutral in the surface layer and is neutral to moderately alkaline throughout the rest of the profile. It is low in nitrogen and moderate to high in phosphorus and potassium. Runoff is medium, and permeability is slow. The available water capacity is high.

This soil is well suited to most of the common crops. Most of the acreage is used for cultivated crops and pasture. Cropland and pasture need drainage. (Capability unit IIw-1; woodland group 3; wildlife group 3)

Newellton Series

Soils of the Newellton series are somewhat poorly drained. They formed in fine-textured and medium-textured alluvium deposited by the Mississippi River. They occur on low natural levees along Lake St. Joseph and abandoned channels of the Mississippi River and on low narrow ridges away from the natural levees. The surface layer is dark grayish-brown clay. The subsoil is dark grayish-brown clay mottled with dark yellowish brown. It is underlain by loam, silty clay loam, silt loam, or very fine sandy loam.

tles; and few, fine, distinct, reddish-brown (5YR 4/4) mottles; massive; friable; few fine roots; few fine pores; many lime concretions; moderately alkaline; gradual, smooth boundary.

IIC5—36 to 42 inches, light brownish-gray (10YR 6/2) very fine sandy loam; common, fine, distinct, strong-brown (7.5YR 5/8) mottles and few streaks of black (10YR 2/1) loam; weak, medium, subangular blocky structure; very friable; few roots; mildly alkaline.

The A horizon ranges from very dark grayish brown (10YR 3/2) to dark grayish brown (10YR 4/2) in color, from silty clay loam to clay in texture, and from 4 to 7 inches in thickness. It is slightly acid or neutral in reaction. The B horizon is dark grayish brown (10YR 4/2) in color and clay or silty clay in texture. It ranges from neutral to moderately alkaline in reaction. It ranges from 6 to 13 inches in thickness if the surface texture is clay, but is at least 10 inches thick if the surface texture is silty clay loam. Mottles are dark yellowish brown (10YR 4/4), dark brown (7.5YR 4/4), and gray (10YR 4/1). The IIC horizon is grayish brown (10YR 5/2), dark grayish brown (10YR 4/2), and light brownish gray (10YR 6/2) and in places contains strata of pale brown (10YR 6/3). Mottles are dark yellowish brown (10YR 4/4), dark brown (7.5YR 4/4), dark gray (10YR 4/1), and reddish brown (5YR 4/4). This horizon is dominantly mildly alkaline or moderately alkaline. It ranges from very fine sandy loam to light silty clay in texture. Stratification is common. In places lime concretions occur at a depth below 20 inches.

Newellton clay, 0 to 1 percent slopes (NcA).—This soil s somewhat poorly drained. It occurs on low natural evees along Lake St. Joseph and Lake St. Peter. The surface layer is dark grayish brown and is 4 to 6 inches thick. t is underlain by a 10- to 14-inch layer of dark grayish-rown clay. Below this is silt loam or loam, and in places ayers of silty clay loam. Mottles are dark yellowish rown, dark brown, and strong brown. Included in mapping were small areas of Commerce silty clay loam, Newellton silty clay loam, and Tunica clay, and small reas of soils that are medium acid in the surface layer.

Preparing a seedbed is somewhat difficult. This soil racks when dry, seals over when wet, and becomes cloddy vhen worked. It is slightly acid or neutral to a depth of 20 nches and is neutral to moderately alkaline below that lepth. It is low in nitrogen and moderate to high in phosphorus and potassium. Runoff and permeability are slow. The available water capacity is moderate.

This soil is well suited to most of the common crops, but t is not well suited to corn. Most of the acreage is used for ultivated crops and pasture. Cropland and pasture need lrainage. (Capability unit IIw–5; woodland group 3; vildlife group 3)

Newellton silty clay loam, 1 to 3 percent slopes NeB).—This is a somewhat poorly drained soil. It occurs n low ridges that generally are no more than 250 feet vide and on nearly level areas of no more than 50 acres n size. The surface layer is dark grayish brown and is 4 to 6 inches thick. It is underlain by an 8- to 14-inch layer of lark grayish-brown clay. Below this is silt loam or very ine sandy loam, and in places layers of silty clay loam. ncluded in mapping were small areas of Commerce silty lay loam, Newellton clay, and Tunica soils, and small reas of soils that are medium acid in the surface layer. Also included were small areas where the slope is as much s 5 percent.

This soil is fairly easy to cultivate, but it is likely to ecome cloddy when worked. It is slightly acid or neutral n the surface layer and neutral to moderately alkaline at a depth below 20 inches. It is low in nitrogen and moderate to high in phosphorus and potassium. Runoff is medium, and permeability is slow. The available water capacity is moderate.

This soil is suited to most of the common crops. Most of the acreage is used for cultivated crops and pasture. Planting crops in rows across the slope helps to control runoff and reduces the hazard of erosion. (Capability unit IIw–4; woodland group 3; wildlife group 2)

Newellton clay, 1 to 5 percent slopes (NcC).—This soil is chiefly on narrow ridges, but it also occurs on the back slopes of natural levees. The areas generally are no more than 400 feet wide and 5,000 feet long. The surface layer is dark grayish brown and is 3 to 5 inches thick. It is underlain by a 10- to 15-inch layer of dark grayish-brown clay. Below this is silt loam or loam, and in places layers of silty clay loam. Mottles are dark yellowish brown, strong brown, and grayish brown. Included in mapping were small areas of Commerce silty clay loam, Newellton silty clay loam, Tunica clay, and small areas of soils that are medium acid in the surface layer.

Seedbed preparation is somewhat difficult. This soil cracks when dry, seals over when wet, and becomes cloddy when worked. It is slightly acid or neutral in the uppermost 20 inches and is neutral to moderately alkaline below that depth. It is low in nitrogen and moderate to high in phosphorus and potassium. Runoff is medium, and permeability is slow. The available water capacity is moderate.

This soil is suited to most cultivated crops, but it is not well suited to corn. About half of the acreage is used for cultivated crops and pasture. Planting crops in rows across the slope helps to control runoff and reduces the hazard of erosion. (Capability unit IIw–4; woodland group 3; wildlife group 4)

Newellton-Mhoon silty clay loams, gently undulating (NuB).—These soils occupy low parallel ridges and swales. The ridges are 1 to 3 feet high, and few are more than 225 feet wide. The swales are about 150 feet wide. The somewhat poorly drained Newellton soils, which make up about 55 percent of the complex, are on the ridges. Their surface layer is dark grayish brown and is 4 to 6 inches thick. It is underlain by an 8- to 16-inch layer of dark grayish-brown clay. Below this is silt loam or loam, and in places layers of silty clay loam. The poorly drained Mhoon soils, which make up about 45 percent of the complex, are in the swales and on the lower slopes of the ridges. Their surface layer is dark grayish brown and is 4 to 10 inches thick. It is generally underlain by dark-gray or gray silt loam, loam, or silty clay loam, but in some places it is underlain by clay or silty clay layers that are as much as 10 inches thick. Mhoon soils are described under the heading "Mhoon Series." Included in mapping were small areas of Commerce silty clay loam and Sharkey silty clay loam, and small areas of soils that are medium acid in the surface layer. Also included were small areas of Newellton silty clay loam where the slope is as much as 5 percent.

Wetness in the swales and the irregular slopes make management somewhat difficult. These soils are fairly easy to cultivate but are likely to become cloddy when worked. They are slightly acid or neutral in the surface layer and neutral to moderately alkaline at a depth below 20 inches. They are low in nitrogen and moderate to high in phosphorus and potassium. Runoff is medium on the ridges and slow in the swales. The available water capacity is high.

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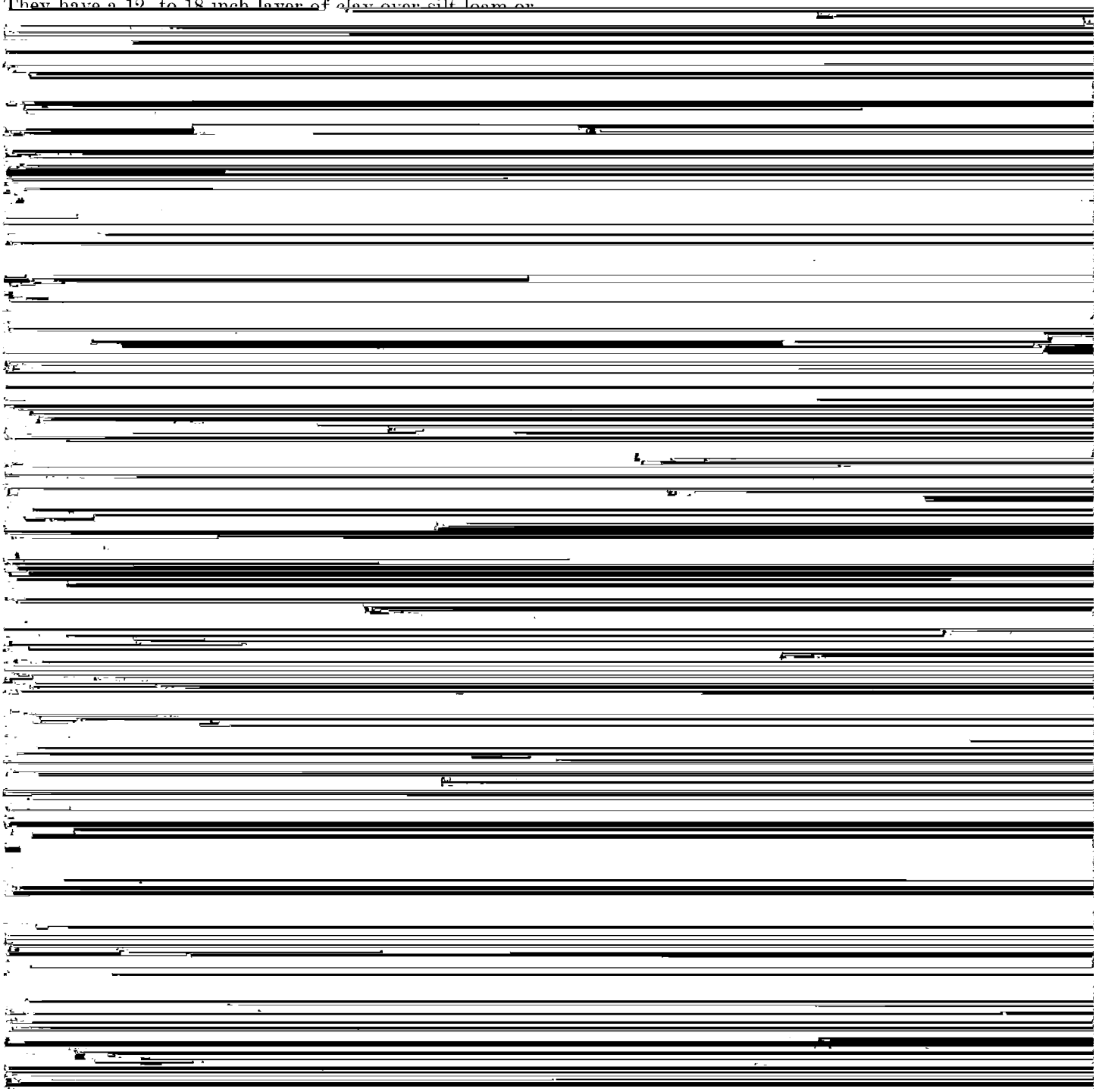
These soils are suited to most cultivated crops. Most of the acreage is used for cultivated crops and pasture. Cropland and pasture need drainage. (Capability unit IIw-3; woodland group 3; wildlife group 4)

Newellton-Commerce-Tunica complex, undulating (NtC).—These soils occupy parallel ridges and swales along abandoned channels of the Mississippi River. The ridges are 2 to 5 feet high and are less than 175 feet wide. The swales are about 125 feet wide. The somewhat poorly drained Newellton soils, which make up about 45 percent of the complex, are on the uppermost slopes of the ridges. They have a 12- to 18-inch layer of clay over silt loam or below that depth. They are low in nitrogen and moderate to high in phosphorus and potassium. Newellton soils have slow permeability and moderate available water capacity. Sharkey soils have very slow permeability and moderate available water capacity. Runoff is medium on the ridges and slow in the swales.

These soils are suited to most of the common crops, but they are not well suited to corn. The swales need drainage. About half of the acreage is woodland. The rest is used for cultivated crops and pasture. (Capability unit IIIw–4; woodland group 3; wildlife group 4)

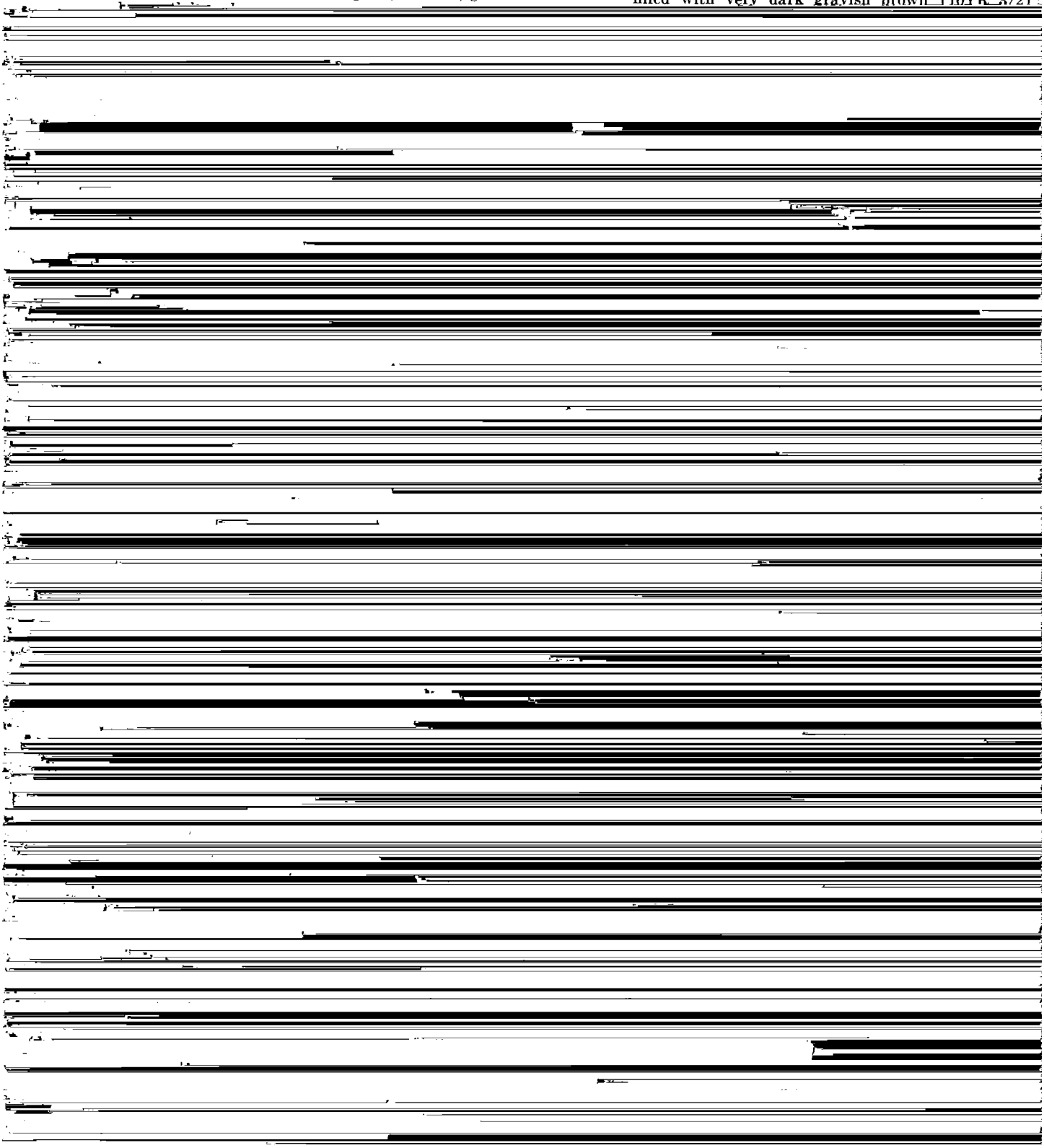


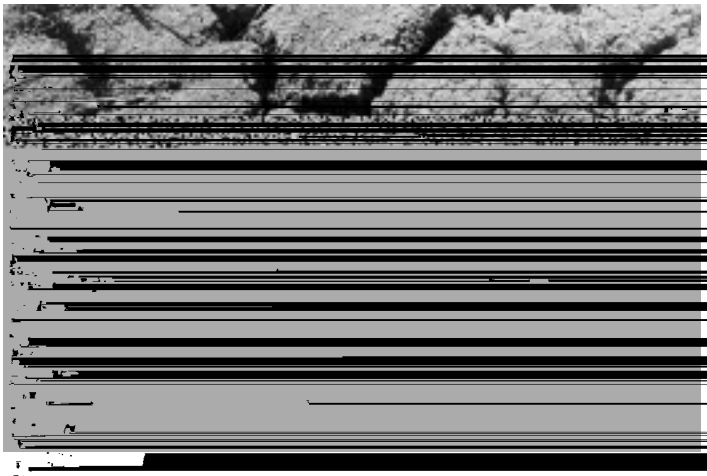
C4—36 to 45 inches, pale-brown (10YR 6/3) fine sandy loam; weak, medium, subangular blocky structure; loose; few fine roots; few fine pores in peds; neutral; gradual, smooth boundary.

C5—45 to 50 inches, brown (7.5YR 5/4) very fine sandy loam; weak, medium, subangular blocky structure; friable; few fine roots; few fine pores in peds; neutral; grad-

100 feet west of gravel road, and ¾ mile south of railroad, at right corner of quarter section NW¼NW¼ sec. 46, T. 11 N., R. 12 E.

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) clay; weak, fine, granular structure; firm; few root channels filled with very dark grayish brown (10YR 3/2);





This soil is suited to most of the common crops. Most of the acreage is used for cultivated crops. Cropland and

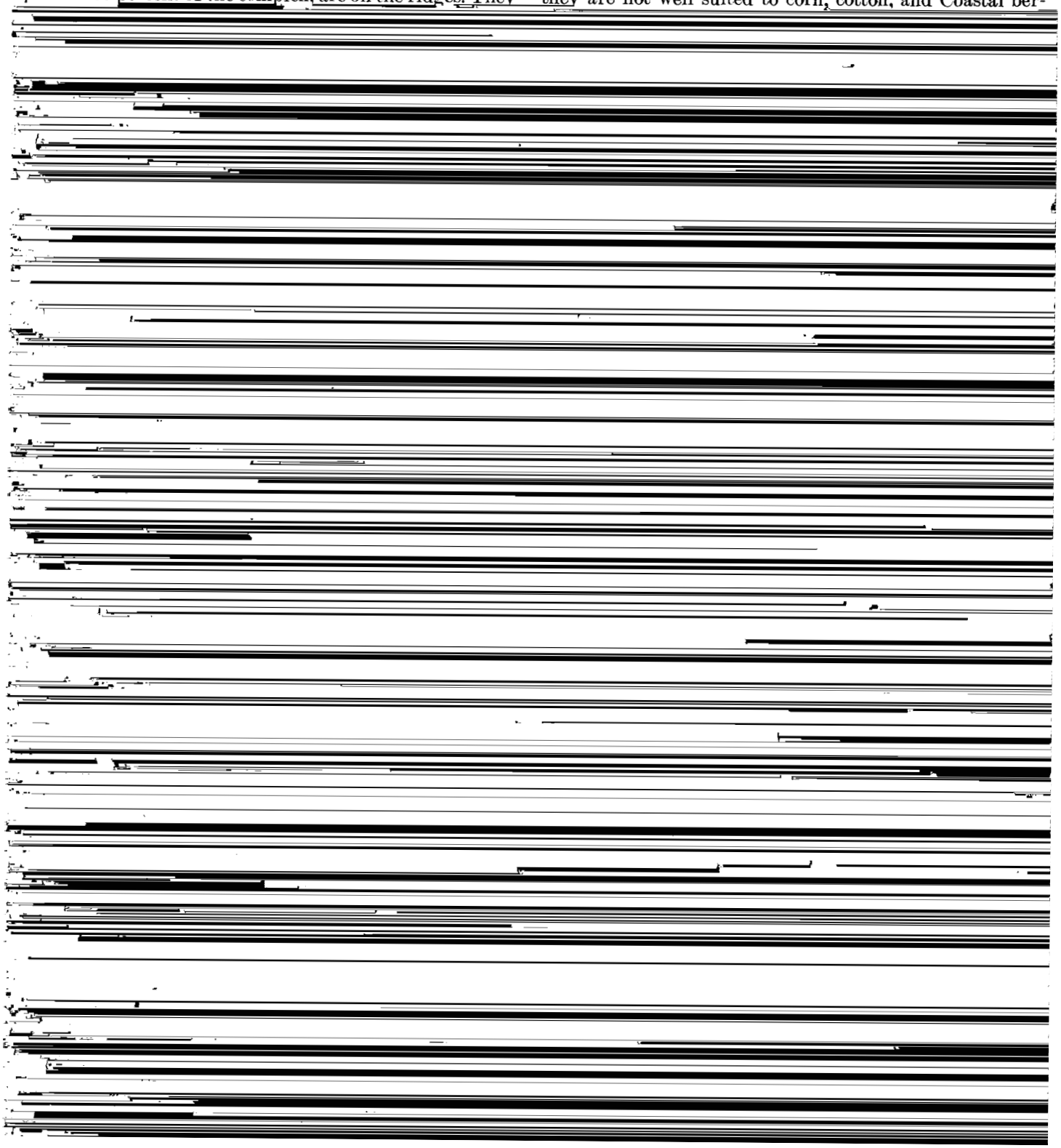
B2t—10 to 21 inches, grayish-brown (10YR 5/2) clay; common, fine, distinct, strong-brown (7.5YR 5/6) mottles and few dark-brown (7.5YR 4/4) mottles; moderate, me-

grass. Most of the acreage is woodland. The rest is used for cultivated crops and pasture. Cropland and pasture need drainage. (Capability unit IIIw–2; woodland group 4;

Tensas-Alligator clays, undulating (TcD).—These soils occupy narrow ridges and swales. The ridges are 3 to 8 feet high, and few are more than 225 feet wide. The swales are generally less than 150 feet wide. The poorly drained to somewhat poorly drained Tensas silty clays, which make up about 60 percent of the complex, are on the ridges. They

medium on the ridges and slow in the swales. Tensas and Alligator soils have very slow permeability and moderate available water capacity. Dundee soils have moderately slow permeability and high available water capacity.

These soils are suited to most of the common crops, but they are not well suited to corn, cotton, and Coastal ber-



row, nearly level areas, mainly in the eastern part of the parish. The nearly level areas are adjacent to Sharkey soils. The surface layer is dark grayish-brown clay. The subsoil is dark-gray clay mottled with brown. It is underlain by grayish-brown loam mottled with brown. Below this is grayish-brown silt loam.

Tunica soils are associated with Commerce, Mhoon, Newellton, Robinsonville, and Sharkey soils. They are finer textured and more poorly drained than Commerce and Robinsonville soils. They have thicker clay layers than Mhoon and Newellton soils. They are underlain by loamy material at a depth of 20 to 30 inches, in comparison with

(10YR 4/4), gray (10YR 5/1), dark gray (10YR 4/1), reddish brown (5YR 4/3), and strong brown (7.5YR 5/6).

Tunica clay (Tu).—This soil is poorly drained. It occurs on low natural levees adjacent to Sharkey soils. Most areas are no more than 100 acres in size. The surface layer is dark grayish brown and sticky and is about 5 inches thick. It is underlain by 14 to 16 inches of dark-gray, plastic clay mottled with brown. Below this is grayish-brown silt loam, loam, very fine sandy loam, and silty clay loam. In areas where there are Indian mounds, these soils have very dark gray layers. Included in mapping were small areas of Mhoon silty clay loam, Newellton clay, and Sharkey clay,

[redacted]

only special management required. Removing excess water from the swales is advisable. Land leveling and smoothing would improve drainage, reduce erosion, and make it

Capability unit IIw–3

This unit consists of poorly drained to somewhat poorly drained silty clay loams and a silt loam that is moderately

Capability unit IIw–5

The one soil in this unit, Newellton clay, 0 to 1 percent slopes, is level and somewhat poorly drained. It is slowly permeable and has moderate available water capacity. It is high in natural fertility.

This soil is suited to soybeans, oats, wheat, cotton, rice, tall fescue, common bermudagrass, Coastal bermudagrass, dallisgrass, Pensacola bahiagrass, ryegrass, johnsongrass, white clover, and southern wild winter peas. It is not well suited to corn. Hay generally can be harvested from the pastures during periods of peak growth.

This soil is difficult to keep in good tilth. It can be worked within only a fairly narrow range of moisture content. It swells and seals over when wet, becomes hard and cracks when dry, and becomes cloddy when worked. Seedbed preparation is difficult. This soil is low in nitrogen and moderate to high in phosphorus and potassium. It responds well to nitrogen fertilizer. A suitable cropping system consists of 2 or 3 years of row crops followed by 1 or 2 years of oats or wheat.

Drainage is generally needed. Land leveling and smoothing would improve drainage and increase efficiency in the use of farm equipment, but the soil material is difficult to handle.

This soil makes up less than 1 percent of the parish. About 60 percent of the acreage is used for cultivated crops and pasture.

Capability unit IIIw–1

The soils in this unit are level, poorly drained clays. They are very slowly permeable and have moderate available water capacity. They are high in natural fertility.

These soils are well suited to rice. They are suited to soybeans, oats, wheat, cotton, common bermudagrass, dallisgrass, tall fescue, Pensacola bahiagrass, ryegrass, johnsongrass, white clover, and southern wild winter peas. They are not well suited to corn and Coastal bermudagrass. Hay generally can be harvested from the pastures during

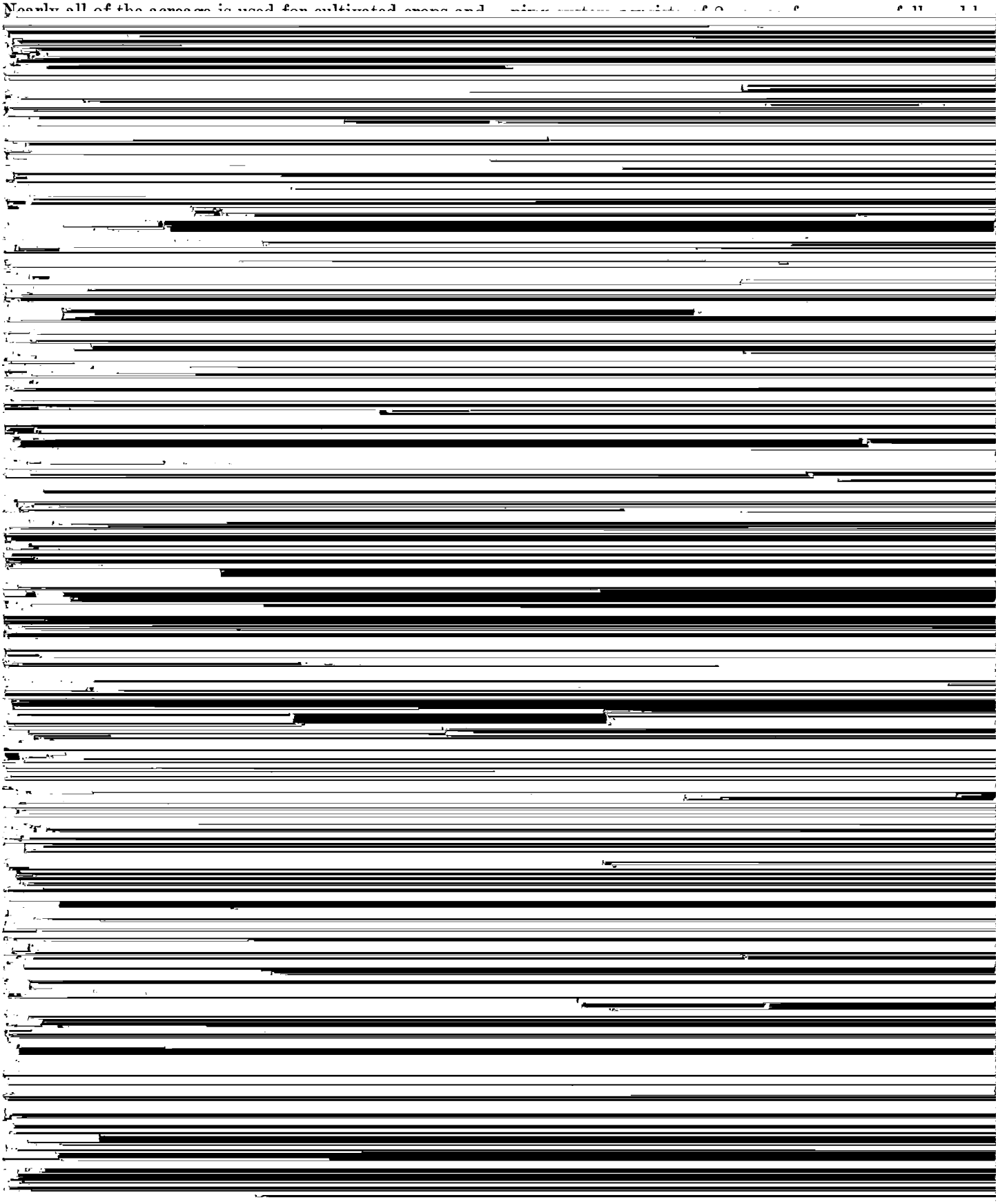
Figure 5.—**Cloddy surface of Sharkey clay. Soil has been worked down to small clods commonly called "buckshot."**

hiagrass, dallisgrass, johnsongrass, ryegrass, white clover, and southern wild winter peas. They are not well suited to corn and Coastal bermudagrass. Hay generally can be harvested from the pastures during periods of peak growth.

These soils are difficult to keep in good tilth. They can be worked within only a narrow range of moisture content. They swell and seal over when wet, become very hard and crack when dry, and become cloddy when worked. Seedbed preparation is difficult. These soils are low in nitrogen and low to moderate in phosphorus and potassium. They respond fairly well to fertilization. Lime may be needed. A suitable cropping system consists of 2 years of row crops followed by 1 year of oats or wheat.

Drainage is needed. Removing excess water is the main management problem. Land leveling and smoothing would improve drainage and increase efficiency in the use of farm equipment, but the soil material is difficult to handle

Nearly all of the acreage is used for cultivated crops and [illegible]



Droughtiness is the main limitation. Land leveling and smoothing would make it easier to operate farm equipment, but a large amount of earth would have to be moved.

This soil makes up less than 1 percent of the parish. Nearly all of the acreage is woodland.

Capability unit Vw–1

The one soil in this unit, Sharkey clay, overflow, is level and poorly drained. It occurs along the Tensas River and in old channels of the Mississippi River. It is subject to overflow and is covered with water for long periods, mainly in winter and spring. This soil is very slowly permeable. It is high is natural fertility.

Because of the frequency and duration of overflow, this soil is not suited to cultivated crops and is not too well suited to pasture grasses. Common bermudagrass generally can be grown successfully.

This soil makes up about 2 percent of the parish. Nearly all of the acreage is woodland.

Capability unit Vw–2

The soils in this unit range from poorly drained clays to excessively drained fine sands. They occur on the river of overflow. Common bermudagrass, dallisgrass, Pensacola bahiagrass, southern wild winter peas, and white clover can be grown in areas where the overflow hazard is not too serious.

These soils make up about 8 percent of the parish. Nearly all of the acreage is woodland. The rest is pasture.

Capability unit VIIIs–1

The one land type in this unit, Oil-waste land, has been affected by salt water and oily liquids from oil and gas wells. It has no value for farming.

Estimated Yields

Table 2 shows estimated yields, under high-level management, for the principal crops grown in Tensas Parish. These are yields averaged over a 10-year period. The estimates are based chiefly on observations made by members of the soil survey party, on information supplied by farmers and other agricultural workers, and on long-term experiments. All estimates are based on average rainfall, adequate drainage, and control of overflow. Irrigation was

TABLE 2.—*Estimated average acre yield of principal crops under high-level management*—Continued

Soil	Cotton	Soybeans	Corn	Wheat	Oats	Rice	Tall fescue and legumes	Coastal bermudagrass	Common bermudagrass	Dallisgrass
	Lb. of lint	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*A.U.M.*[1]	*A.U.M.*[1]	*A.U.M.*[1]	*A.U.M.*[1]
Dundee silt loam	725	32	80	32	60	------	9.0	11.0	8.5	6.0
Dundee silty clay loam	725	30	70	30	50	------	9.0	10.0	8.0	6.0
Dundee-Tensas-Goldman complex, gently undulating:										
Dundee	675	30	70	30	50	------	9.0	10.0	8.0	6.0
Tensas	400	27	40	20	37	------	8.0	8.0	6.5	5.5
Goldman	525	25	55	25	50	------	--------	9.5	7.5	---------
Dundee-Goldman-Tensas complex, undulating:										
Dundee	700	30	70	30	50	------	9.0	10.0	8.0	6.0
Goldman	525	25	55	25	50	------	--------	9.5	7.5	---------
Tensas	400	27	40	20	37	------	7.5	8.0	6.5	5.5
Loamy alluvial land and Robinsonville soils, overflow, 0 to 5 percent slopes	------	--------	------	------	------	------	--------	--------	--------	---------
Mhoon silt loam	675	35	60	30	50	------	9.0	10.5	8.5	6.0
Mhoon silty clay loam	600	32	50	25	45	85	9.0	9.0	8.0	6.0
Newellton clay, 0 to 1 percent slopes	650	35	65	30	50	85	9.0	9.5	8.0	6.0
Newellton clay, 1 to 5 percent slopes	525	30	55	20	40	------	8.5	9.0	7.5	6.0
Newellton silty clay loam, 1 to 3 percent slopes	675	35	60	30	50	------	9.0	10.0	8.0	6.5
Newellton-Commerce-Tunica complex, undulating:										
Newellton	600	33	60	30	50	------	9.0	10.0	8.0	6.5
Commerce	750	35	85	35	60	------	9.0	12.0	8.5	6.5
Tunica	550	32	55	27	45	------	8.5	8.5	7.0	6.0
Newellton-Mhoon silty clay loams, gently undulating:										
Newellton	600	34	60	30	50	------	9.0	10.0	8.0	6.5
Mhoon	575	30	45	23	43	------	8.5	9.0	8.0	6.0
Newellton-Sharkey clays, undulating:										
Newellton	575	30	55	20	40	------	8.0	8.0	7.5	6.0
Sharkey	475	27	45	22	35	------	8.5	8.5	7.0	5.5
Oil-waste land	------	--------	------	------	------	------	--------	--------	--------	---------
Robinsonville very fine sandy loam, 1 to 5 percent slopes	775	35	85	30	60	------	9.0	12.0	8.5	6.5
Sharkey clay	575	35	50	25	45	90	9.0	9.0	7.5	6.0
Sharkey clay, overflow	------	--------	------	------	------	------	--------	--------	--------	---------
Sharkey silt loam	625	35	55	27	50	85	9.0	9.5	8.0	6.5
Sharkey silty clay loam	600	35	53	25	47	90	9.0	9.0	7.5	6.0
Tensas silty clay	525	30	42	25	43	85	8.5	8.5	7.0	5.5
Tensas silty clay loam	550	33	45	25	45	85	8.5	9.0	7.5	6.0
Tensas-Alligator clays, gently undulating:										
Tensas	475	28	40	23	41	------	8.5	8.0	6.5	5.5
Alligator	400	24	35	20	35	------	7.0	7.5	6.0	4.5
Tensas-Alligator clays, undulating:										
Tensas	450	27	38	22	39	------	8.0	8.0	6.5	6.0
Alligator	375	22	32	19	33	------	6.5	7.0	5.5	4.0
Tensas-Alligator-Dundee complex, gently undulating:										
Tensas	450	28	40	23	41	------	8.5	8.5	6.5	6.0
Alligator	400	24	35	20	35	------	7.5	7.5	6.0	4.5
Dundee	700	29	65	28	45	------	8.5	9.5	7.5	6.0
Tensas-Alligator-Dundee complex, undulating:										
Tensas	425	26	38	21	39	------	8.0	8.0	6.5	6.0
Alligator	375	22	32	19	33	------	7.0	7.0	5.5	4.0
Dundee	675	28	60	27	42	------	8.5	9.5	7.5	6.0
Tunica clay	600	35	60	30	50	85	9.0	9.0	7.5	6.0

[1] Animal-unit-month is a term used to express the carrying capacity of pasture. It is the number of animal units carried per acre, multiplied by the number of months the pasture is grazed during a single grazing season without injury to the sod. An acre of pasture that provides 2 months of grazing for 2 cows has a carrying capacity of 4 animal-unit-months.

Woodland [2]

Commercial forest covers about half of Tensas Parish. The acreage has been decreasing each year, as additional acreage is cleared for cropland and pasture.

Three forest cover types are represented in the parish. The two more extensive are the white oak-red oak-hickory type and the sweetgum-water oak type. Both pure and mixed stands occur within these forest types, but mixed stands are predominant. Less extensive is the riverfront hardwood type, in which cottonwood and willow are the main species.

Southern hardwoods, including cottonwood, black willow, sweetgum, cherrybark oak, willow oak, water oak, Nuttall oak, overcup oak, hackberry, sycamore, ash, red maple, pecan, elm, and baldcypress (fig. 6), are the principal commercial species. Sawlogs, pulpwood, veneer logs, and specialty products are harvested. There are local markets for pulpwood and saw timber.

The soils of Tensas Parish have been assigned to seven woodland suitability groups. Each group consists of soils that are suited to the same kinds of trees, that require the same management, and that have about the same potential productivity. To find the woodland suitability classification for any given soil, refer to the "Guide to Mapping Units."

Table 3 (p. 30) gives a description of each woodland group, the degrees of soil-related hazards and limitations that affect management, the potential productivity of each

		Estimated yearly growth per acre of timber [3]	Board feet (Doyle rule)
			790
			345
			410
			345
			500
			585
			345
			290
			410
			370
			415
			345
			290
			240
			315

Group 4. Level to undulating, poorly drained to somewhat poorly drained, very slowly permeable, moderately fine textured to fine textured soils that are very strongly acid to slightly acid.	Moderate---	Moderate----	Severe----	Cottonwood, Nuttall oak, water oak, willow oak, sweetgum, cherrybark oak, and sycamore.	Cottonwood, Nuttall oak, and sycamore.	Cottonwood-- Cherrybark oak. Water oak--- Willow oak-- Sweetgum---	95 95 80 80 85	415 345 195 195 260
Group 5. Level to undulating, excessively drained, rapidly permeable, coarse-textured soils that are slightly acid to moderately alkaline.	Moderate [7]--	Moderate to severe.	Moderate--	Green ash, cottonwood, hackberry, pecan, sycamore, and sweetgum.	Cottonwood, sweetgum, and sycamore.	Cottonwood-- Cherrybark oak. Water oak--- Willow oak-- Sweetgum---	95 90 90 90 90	415 290 290 290 315
Group 6. Level to undulating, poorly drained, very slowly permeable, fine-textured soils that are slightly acid to very strongly acid.	Moderate [8]--	Moderate----	Severe----	Green ash, baldcypress, cottonwood, red maple, Nuttall oak, water oak, willow oak, and sweetgum.	Green ash, Nuttall oak, baldcypress, cottonwood, and sweetgum.	Cherrybark oak. Water oak---- Willow oak--- Sweetgum----	85 75 75 80	240 155 155 215
Group 7. Soils not suited to commercial production of timber.								

[1] Information based on data compiled by South. Forest Expt. Sta., U.S. Forest Serv. (*3*).

[2] Information provided by Walter M. Broadfoot, soil scientist, U.S. Dept. Agr. Forest Serv., South. Hardwoods Lab., Stoneville, Miss., in cooperation with Miss. Agr. Expt. Sta. and South. Hardwood Forest Res. Group. Each site index is the midpoint of an approximate range of 10. Thus, the range for a given site index of 100 is approximately 95 to 105.

[3] Average yearly growth in board feet (Doyle rule) for well-stocked, managed stands; cottonwood to age 30, other species to age 60 (*15*). Supplemental data rom soil-site evaluations by the Soil Conservation Service and cooperating agencies. The value is the midpoint in an undetermined range.

[4] Severe on Loamy alluvial land and Robinsonville soils during periods of high water.

[5] Moderate on Goldman soils of the Dundee-Goldman-Tensas complex.

[6] Severe on Clayey alluvial land and Sharkey clay, overflow, and on Sharkey clay, during periods of overflow.

[7] Severe on Crevasse fine sand, overflow, 0 to 8 percent slopes, during periods of overflow.

[8] Severe during periods of overflow.

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TABLE 4.—*Engineering*

[Tests performed by the Louisiana Department of Highways in accordance with

Soil name and location	Louisiana report number	Depth	Horizon	Mechanical analysis [1]						Liquid limit
				Percentage passing sieve [2]		Percentage smaller than [2]				
				No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.	
		In.								*Pct.*
Alligator clay:										
50 feet north of State Highway 566, 6 miles west of Waterproof, SW¼NE¼ sec. 31, T. 10 N., R. 10 E.	R–6051	1 to 6	A12-----	100	99	98	83	67	56	65
	R–6052	20 to 30	C2------	100	100	99	83	65	53	63
Bruin silt loam:										
2,500 feet NW. of intersection of State Highways 605 and 608, sec. 17, T. 12 N., R. 12 E.	R–4879	0 to 7	Ap------	100	91	74	33	16	14	------
	R–4880	18 to 24	B3------	100	83	68	29	18	14	------
Commerce silt loam:										
1,050 feet east of old U.S. Highway 65, NE. of La. Agr. Expt. Sta., NE¼NW¼ sec. 35, T. 11 N., R. 12 E.	R–4868	0 to 6	Ap1-----	100	87	74	35	16	12	------
	R–4869	10 to 19	B2------	100	94	91	68	44	35	46
	R–4870	25 to 32	C1------	100	94	81	43	27	22	25
Crevasse fine sand:										
200 feet NW. of Watershed bench mark, 8 miles east of St. Joseph, T. 13 N., R. 13 E.	R–6053	0 to 5	Ap------	100	9	8	4	3	2	-------
	R–6054	23 to 60	C3------	100	5	4	3	3	2	-------
Dundee silt loam:										
800 feet north and 360 feet west of intersection of State Highways 566 and 3044, sec. 39, T. 10 N., R. 10 E.	R–4871	0 to 5	Ap1-----	100	80	59	26	19	17	-------
	R–4872	8 to 15	B21t----	100	91	77	49	38	33	41
	R–4873	41 to 53	C2------	100	80	64	32	20	18	-------
Newellton clay:										
275 feet west of State Highway 608, 400 feet north of drainage ditch, SE¼SE¼ sec. 45, T. 13 N., R. 12 E.	R–4881	4 to 14	C1------	100	99	99	92	77	60	69
	R–4882	23 to 32	C4------	98	97	93	47	24	20	24
Robinsonville very fine sandy loam:										
1,000 feet north of State Highway 608, 56 feet east of gravel road, NW¼ sec. 49, T. 13 N., R. 12 E.	R–4877	8 to 16	A12-----	100	93	70	27	16	14	-------
	R–4878	21 to 29	C2------	100	47	28	10	9	8	-------
Sharkey clay:										
30 feet north of gravel road, 174 feet west of railroad, SW¼SE¼ sec. 25, T. 11 N., R. 11 E.	5–44548	0 to 4	Ap------	100	99	91	86	79	68	62
	5–44549	4 to 28	C1------	100	99	96	91	80	67	59
	5–44550	28 to 42	C2------	100	99	90	83	70	57	56

[1] Mechanical analysis according to AASHO Designation: T 88–57 (*1*). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data in this table are not suitable for use in naming textural classes for soil.

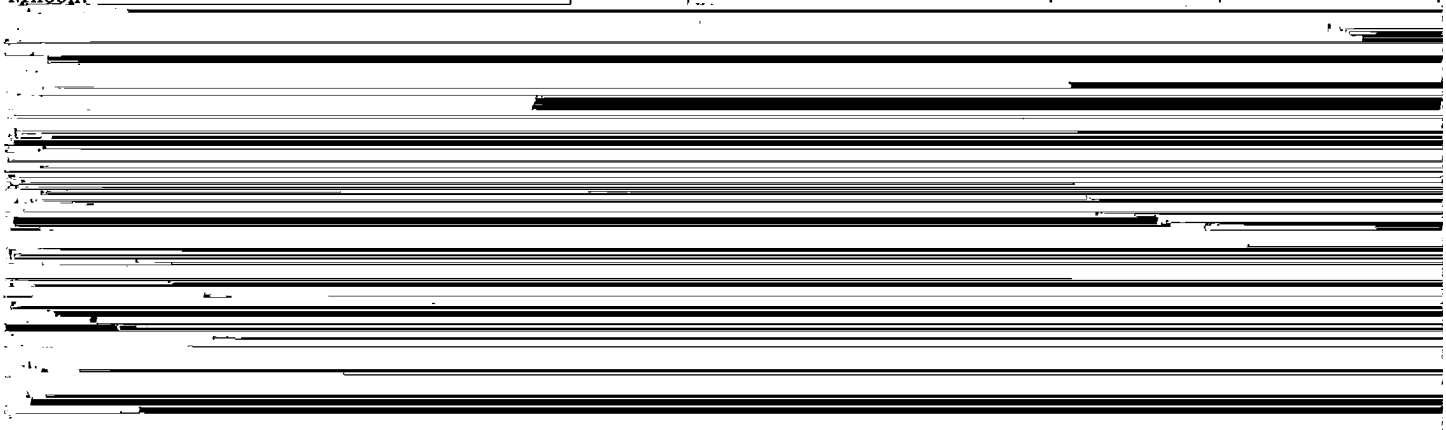
test data

standard procedures of the American Association of State Highway Officials (AASHO)]

Plasticity index	Physical characteristics					Textural class		Classification	
	Shrinkage		Moisture-density data [3]			USDA	Louisiana department of highways	AASHO	Unified [4]
	Limit	Ratio	Maximum dry density	Optimum moisture content for maximum dry density	Moisture content for 95 percent of maximum dry density				
			Lb./cu. ft.	*Pct.*	*Pct.*				
36	6.2	1.93	91.5	28.0	22.5 to 31.6	Silty clay	Heavy clay	A-7-6(20)	CH.
38	14.5	2.02	91.5	28.0	22.5 to 31.6	Silty clay	Heavy clay	A-7-6(20)	CH.
[5] NP	(6)	(6)	106.1	16.0	12.8 to 20.6	Silt loam	Silty loam	A-4(8)	ML.
NP	(6)	(6)	106.1	16.0	12.8 to 20.6	Silt loam	Silty loam	A-4(8)	ML.
NP	(6)	(6)	106.1	16.0	13.0 to 20.6	Silt loam	Silty loam	A-4(8)	ML.
26	13	1.90	102.0	20.6	14.4 to 24.5	Silty clay loam.	Silty clay	A-7-6(16)	CL.
8	17	1.77	101.0	20.4	6.0 to 24.1	Silt loam	Silty clay loam.	A-4(8)	CL.
NP	(6)	(6)	102.8	19.4	<8 to 17.2				

TABLE 5.—*Estimated*

Soil names and map symbols	Depth from surface (typical profile)	Classification		
		USDA texture	Unified	AASHO
	In.			
Alligator clay (AcA, AgB, AgD).	0 to 48	Clay or silty clay	CH	A–7–6(20)
Bruin silt loam (BaA, BaB, BmB, BrC).	0 to 34	Silt loam	ML	A–4(4–8)
For properties of Mhoon part of BmB, see Mhoon silty clay loam.	34 to 48	Silt loam or very fine sandy loam.	ML or SM	A–4(2–8)
For properties of Robinsonville part of BrC, see Robinsonville very fine sandy loam.				
For properties of Crevasse part of BrC, see Crevasse fine sand.				
Clayey alluvial land and Sharkey clay (ChC).	0 to 48	Clay, silty clay loam, and silt loam.	CH, CL and ML.	A–7–6, A–6, and A–4.
For properties of Sharkey part of ChC, see Sharkey clay.				
Commerce:				
Silt loam (CmA, CmB).	0 to 10	Silt loam	ML	A–4(4–8)
	10 to 19	Silty clay loam	CL	A–7–6 or A–6
	19 to 48	Silt loam or silty clay loam	ML or CL	A–4, A–6, or A–7–6
Silty clay loam (CnA, CoB).	0 to 8	Silty clay loam	CL	A–7–6 or A–6
	8 to 48	Silt loam or silty clay loam	ML or CL	A–4, A–6, or A–7–6
Crevasse fine sand (CrD, CsD).	0 to 48	Fine sand or loamy fine sand	SP–SM or SM.	A–3(0) or A–2–4(0).
Dundee:				
Silt loam (Dd, DgD, DtB).	0 to 8	Silt loam or loam	ML	A–4(4–8)
For properties of Tensas part of DgD and DtB, see Tensas silty clay.	8 to 23	Clay loam	CL	A–7–6 or A–6
For properties of Goldman part of DgD and DtB, see Goldman very fine sandy loam.	23 to 48	Very fine sandy loam or silt loam.	ML or CL	A–4 or A–6
Silty clay loam (De).	0 to 25	Silty clay loam	CL	A–6 or A–7–6
	25 to 48	Silt loam or silty clay loam	ML or CL	A–6 or A–7–6
Loamy alluvial land and Robinsonville soils (LrC).	0 to 48	Silt loam, silty clay loam, and very fine sandy loam.	ML and CL	A–4 and A–6
For properties of Robinsonville part of LrC, see Robinsonville very fine sandy loam.				
Goldman very fine sandy loam.	0 to 5	Very fine sandy loam or fine sandy loam.	ML or SM	A–4(0–8)
	5 to 18	Loam or very fine sandy loam.	ML or SM	A–4(4–8)
	18 to 48	Fine sandy loam or very fine sandy loam.	SM or ML	A–4(0–8)
Mhoon:				



properties of soils

Percentage passing sieve— No. 40 (0.42 mm.)	Percentage passing sieve— No. 200 (0.074 mm.)	Permeability	Available water capacity	Reaction	Shrink-swell potential	Percolation rate	Depth to and duration of seasonal high water table
		In./hr.	*In./in.*	*pH*		*Min./in.*	
100	95 to 100	<0.2	0.19	5.0 to 6.5	Very high.	<75	Less than 15 inches for 2 to 6 months per year.
100	85 to 95	0.63 to 2.0	0.23	6.0 to 7.0	Low.	>45	30 to 60 inches for 2 to 6 months per year.
100	80 to 95	0.63 to 2.0	0.21 to 0.23	7.5 to 8.0	Low.		
100	85 to 100	<0.2	0.19 to 0.23	7.0 to 8.0	Moderate to very high.	<75	Less than 15 inches for 2 to 6 months per year.
100	85 to 95	0.63 to 2.0	0.23	6.0 to 7.0	Low.	45 to 75	15 to 30 inches for 2 to 6 months per year.
100	85 to 100	0.2 to 0.63	0.21	6.5 to 7.5	Moderate.		
100	85 to 100	0.2 to 2.0	0.23 to 0.21	7.0 to 8.0	Low to moderate.		
100	85 to 100	0.2 to 0.63	0.21	6.0 to 7.0	Moderate.	45 to 75	15 to 30 inches for 2 to 6 months per year.
100	85 to 100	0.2 to 2.0	0.23 to 0.21	6.5 to 8.0	Low to moderate.		
75 to 90	20 to 50	>6.3	0.06 to 0.1	6.0 to 8.0	Low.	>45	30 to 60 inches for 2 to 6 months per year.
100	75 to 90	0.63 to 2.0	0.23	5.5 to 6.5	Low.	45 to 75	15 to 30 inches for 2 to 6 months per year.
100	85 to 100	0.2 to 0.63	0.17	5.0 to 6.0	Moderate.		
100	75 to 90	0.2 to 2.0	0.23 to 0.21	5.0 to 6.5	Low.		

TABLE 5.—*Estimated*

Soil names and map symbols	Depth from surface (typical profile)	Classification		
		USDA texture	Unified	AASHO
	In.			
Silty clay loam (NeB, NuB).	0 to 7	Silty clay loam	CL	A–7–6(13–16)
For properties of Mhoon part of NuB, see Mhoon silty clay loam.	7 to 17	Clay	CH	A–7–6(20)
	17 to 48	Silt loam, silty clay loam, or very fine sandy loam.	ML or CL	A–4 or A–6
Oil-waste land (Ow).[1]				
Robinsonville very fine sandy loam (RbC).	0 to 16	Very fine sandy loam or fine sandy loam.	ML or SM	A–4(2–8)
	16 to 48	Very fine sandy loam or fine	ML or SM	A–4(0–8)

properties of soils—Continued

Percentage passing sieve—		Permeability	Available water capacity	Reaction	Shrink-swell potential	Percolation rate	Depth to and duration of seasonal high water table
No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	*In./hr.*	*In./in.*	*pH*		*Min./in.*	
100	90 to 100	0.2 to 0.63	0.21	6.0 to 7.0	Moderate.	45 to 75	15 to 30 inches for 2 to 6 months per year.
100	95 to 100	<.02	0.19	6.5 to 7.5	Very high.		
100	60 to 100	0.2 to 2.0	0.21 to 0.23	7.5 to 8.0	Low to moderate.		
85 to 100	45 to 95	0.63 to 2.0	0.14 to 0.22	6.0 to 7.0	Low.	>50	30 to 60 inches for 2 to 6 months per year.
85 to 100	40 to 90	0.63 to 2.0	0.14 to 0.22	7.0 to 8.0	Low.		
100	95 to 100	<0.2	0.19	6.0 to 7.5	Very high.	<75	Less than 15 inches for 2 to 6 months per year.
100	85 to 100	<0.2 to 0.63	0.19 to 0.23	7.5 to 8.0	Very high to low.		
100	95 to 100	0.2 to 0.63	0.21	6.0 to 7.0	Moderate.	<75	Less than 15 inches for 2 to 6 months per year.
100	95 to 100	<0.2	0.19	7.0 to 8.0	Very high.		
100	85 to 100	<0.2 to 0.63	0.19 to 0.23	7.5 to 8.0	Very high to low.		

ing to (1) the percentage of gravel, sand, and fines; (2) the shape of the grain-size distribution curve; and (3) the plasticity and compressibility characteristics. An approximate classification of soils by this system can be made in the field. For exact classification, mechanical analysis is needed, and for some soils standard tests for liquid limit and plastic limit are needed also. In the Unified system soils are grouped in 15 classes. There are eight classes of coarse-grained soils, six classes of fine-grained soils, and one class of highly organic soils.

Table 4 shows the AASHO and Unified classification of specified soils in the parish, as determined by laboratory tests. Table 5 shows the estimated classification of all the soils in the parish according to both systems.

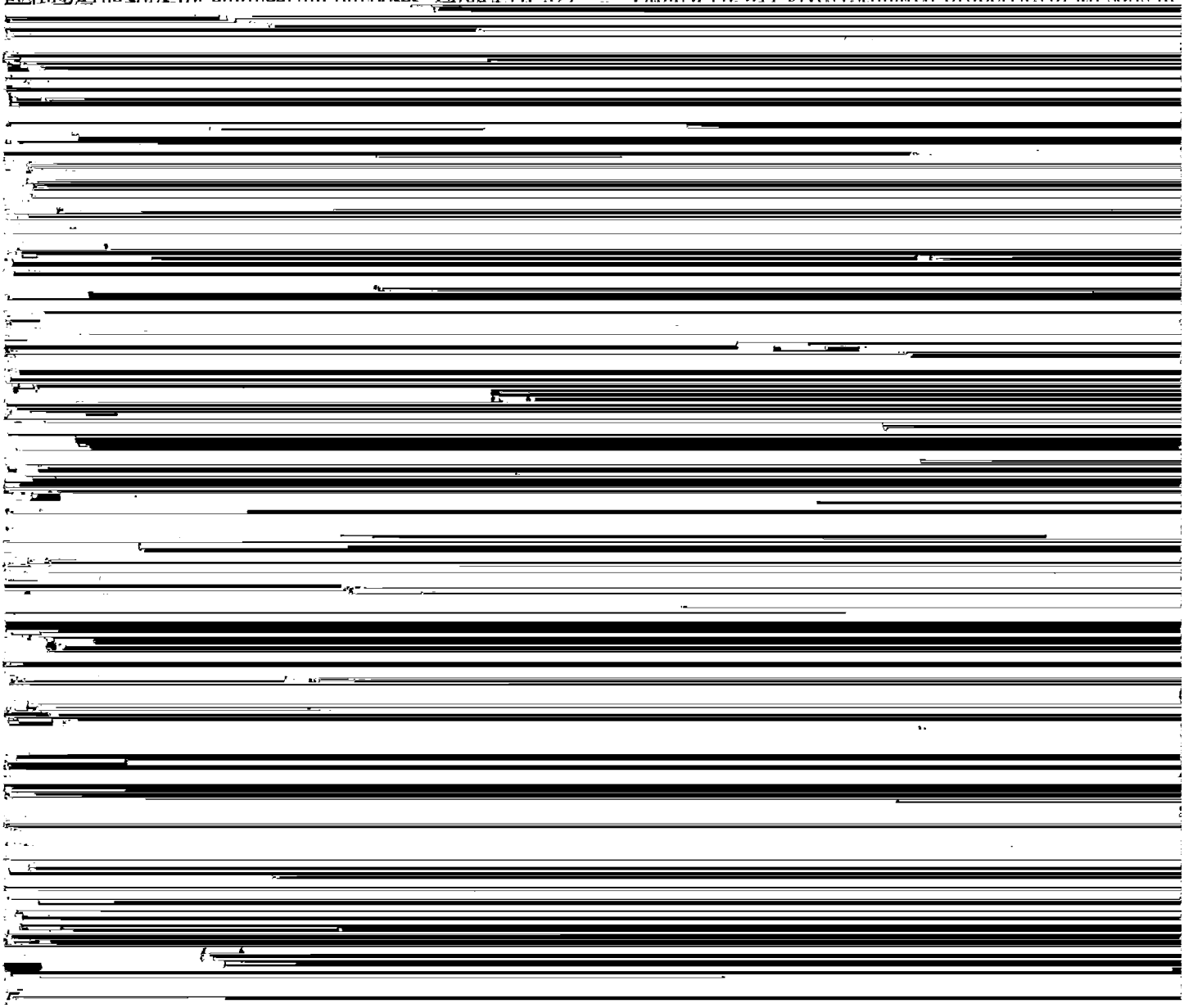
Test data

Soil samples taken from eight soil profiles in the parish were tested in accordance with standard procedures to help evaluate the soils for engineering purposes. Table 4 (p. 32)

Shrinkage characteristics are of considerable importance in selecting soils to be used for engineering purposes. As moisture leaves a soil, the soil shrinks and decreases in volume in proportion to the loss of moisture, until a point is reached where shrinkage stops even though additional moisture is removed. The moisture content at which shrinkage stops is called the *shrinkage limit.* This is expressed as a percentage of the weight of the soil when it is oven dry. The *shrinkage ratio* is the volume change resulting from the drying of a soil, divided by the loss of moisture caused by drying. The ratio is expressed as a percentage of the volume of the oven-dry soil. The volume change used in computing shrinkage ratio is the change in volume that takes place in a soil when it dries from a given moisture content to a point where no further shrinkage takes place.

Estimated properties of the soils

Table 5 (p. 34) gives estimated properties of all soils in



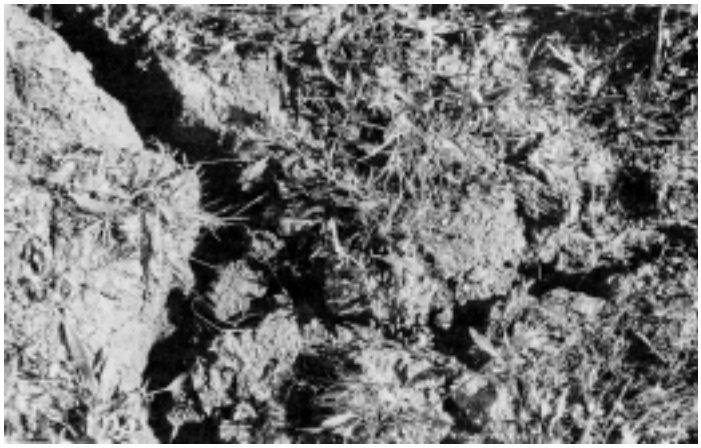


Figure 7.—**Sharkey clay cracks when dry. The shrink-swell potential is very high.**

Newellton, and Tensas soils shrink and crack when dry and seal over when wet, have low bearing capacity, and therefore present special limitations in foundation designs. Many of the soils in the parish have a seasonal high water table, and some are subject to overflow. The depth to the seasonal high water table is given in table 5. The bedrock in this parish is not a limiting factor, because it is at considerable depth. In fact, it is at too great a depth to be used as footings for foundations.

The soil features that most significantly affect road lopotential. Only nonplastic soils, such as Crevasse, Robinsonville, and Goldman, are suitable for road subbase. The Bruin soils and certain layers of the Commerce, Dundee, and Newellton soils may be used with additives for subbase material if the plasticity index is less than 15. The side slopes of soils that are susceptible to erosion, such as the Bruin, Robinsonville, Crevasse, and Goldman soils, need a protective cover of vegetation.

Farm Ponds or Reservoirs

The soil feature most important in selecting reservoir location is the permeability of the underlying material, which controls the rate of seepage. Permeable soils, such as Crevasse soils, or soils underlain by permeable layers, such as Newellton soils, generally are unsuitable for farm ponds or reservoirs unless treated so as to reduce seepage. The soil features important for embankments are permeability, seepage, piping, shrink-swell potential, susceptibility to erosion, and strength and stability. Embankments generally have an inner core of clayey, impermeable material covered by an outer shell of silty or sandy material. This type of construction prevents most of the seepage through the embankment and improves the stability of the embankment slopes.

Drainage

Most of the soils that have less than 1 percent slope or that occur in swales in ridge-swale topography need surface drainage for maximum production of the crops generally grown in the parish. The clayey, very slowly permeable level soils such as Sharkey and Alligator soils re-

TABLE 6.—*Engineering*

[Engineers and others should not apply specific values

Mapping units and map symbols	Suitability as source of—				Degree and kind of		
					Dwellings with—		
	Topsoil	Road subgrade	Road subbase	Sand	Public or community sewage system	Septic tank filter field	Recreational areas
Alligator clay, 0 to 1 percent slopes (AcA).	Poor	Poor	Not suitable	Not suitable	Severe: high shrink-swell potential; low bearing capacity; high water table; flooding.	Very severe: slow percolation; very high shrink-swell potential; low bearing capacity; high water table; flooding.	Severe: high water table; flooding; surface texture.
Alligator clay, gently undulating (AgB). Alligator clay, undulating (AgD).	Poor	Poor	Not suitable	Not suitable	Severe: high shrink-swell potential; low bearing capacity; high water table; flooding in swales.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table; flooding in swales.	Severe on ridges and very severe in swales; high water table; flooding; surface texture.
Bruin silt loam, 0 to 1 percent slopes (BaA). Bruin silt loam, 1 to 3 percent slopes (BaB).	Good	Fair	Suitable with additives.	Poor: very fine sandy loam available below a depth of 34 inches in places.	Slight	Slight	Very slight
Bruin-Mhoon complex, gently undulating (BmB): Bruin	Good	Fair	Suitable with additives.	Poor: very fine sandy loam available below a depth of 34 inches in places.	Slight	Slight	Very slight

interpretations

to the estimates given for bearing capacity of soils]

limitations for—	Soil features that adversely affect suitability for engineering purposes						
Light industry	Farm ponds or reservoirs		Road location	Irrigation		Drainage (open ditch)	Grading or leveling
	Reservoir area	Embankment		Sprinkler	Furrow or contour border		
Severe: high shrink-swell potential; high	None	High shrink-swell potential; low	High water table; high shrink-swell	Very slow intake after cracks seal;	Very slow intake; poor material for	High water table; very slow per-	Texture and wetness; very difficult to

TABLE 6.—*Engineering*

Mapping units and map symbols	Suitability as source of—				Degree and kind of		
					Dwellings with—		
	Topsoil	Road subgrade	Road subbase	Sand	Public or community sewage system	Septic tank filter field	Recreational areas
Bruin-Robinsonville-Crevasse—Continued Robinsonville	Good	Fair to good	Poor to fair	Fair: loamy fine sand available below a depth of 36 inches in places.	Very slight	Very slight	Very slight
Crevasse	Poor	Fair to good	Fair	Good: fine sand to loamy sand available.	Slight	Slight	Moderate: surface texture.
Clayey alluvial land and Sharkey clay, overflow, 0 to 5 percent slopes (ChC).	Poor	Poor	Not suitable	Not suitable	Very severe: overflow hazard.	Very severe: overflow hazard.	Very severe: overflow hazard.
Commerce silt loam, 0 to 1 percent slopes (CmA). Commerce silt loam, 1 to 3 percent slopes (CmB).	Good	Fair	Some layers suitable with additives.	Not suitable	Slight	Moderate: moderate percolation.	Slight
Commerce silty clay loam, 0 to 1 percent slopes (CnA).	Fair to good.	Fair	Some layers suitable with additives.	Not suitable	Slight	Moderate: moderate percolation.	Moderate: surface texture.
Commerce silty clay loam, gently undulating (CoB).	Fair to good.	Fair	Some layers suitable with additives.	Not suitable	Slight	Moderate: moderate percolation.	Moderate: surface texture.
Crevasse fine sand, 0 to 8 percent slopes (CrD).	Poor	Fair to good	Fair	Good: fine sand to loamy fine sand available.	Slight	Slight	Moderate: surface texture.
Crevasse fine sand, overflow, 0 to 8 percent slopes (CsD).	Poor	Fair to good	Fair	Good: fine sand to loamy fine sand available.	Very severe: overflow hazard.	Very severe: overflow hazard.	Very severe: overflow hazard.

interpretations—Continued

limitation for—	Soil features that adversely affect suitability for engineering purposes					
	Farm ponds or reservoirs		Road location	Irrigation	Drainage	Grading or
Light industry						

TABLE 6.—*Engineering*

Mapping units and map symbols	Suitability as source of—				Degree and kind of		
					Dwellings with—		
	Topsoil	Road subgrade	Road subbase	Sand	Public or community sewage system	Septic tank filter field	Recreational areas
Dundee silt loam (Dd).	Good	Fair	Some layers suitable with additives.	Not suitable	Slight	Moderate: moderate percolation.	Slight
Dundee silty clay loam (De).	Fair	Fair	Not suitable	Not suitable	Slight	Moderate: moderate percolation.	Moderate: surface texture.

interpretations—Continued

limitation for—	Soil features that adversely affect suitability for engineering purposes			
	Farm ponds or reservoirs		Irrigation	

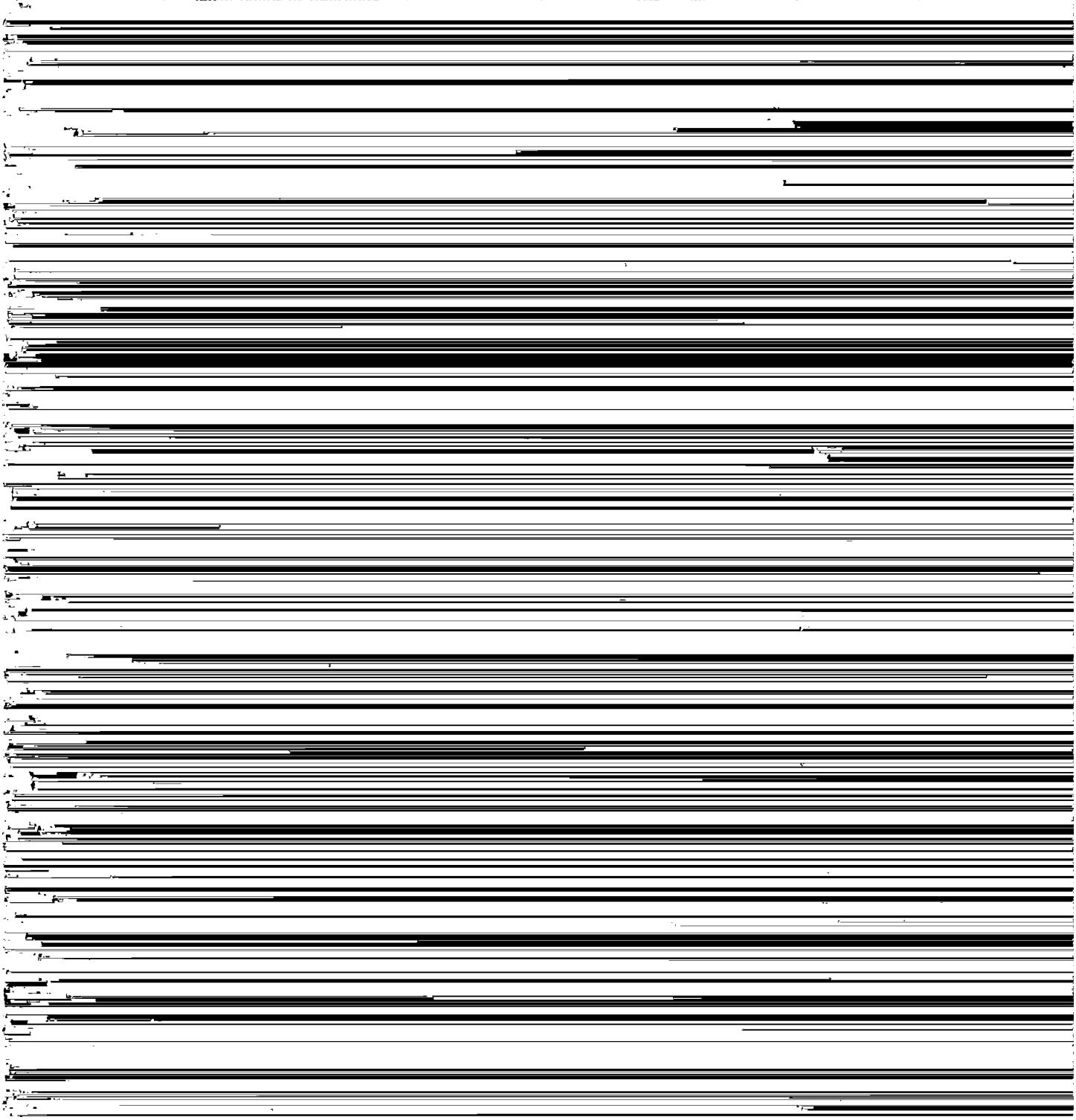


TABLE 6.—*Engineering*

Mapping units and map symbols	Suitability as source of—				Degree and kind of		
					Dwellings with—		
	Topsoil	Road subgrade	Road subbase	Sand	Public or community sewage system	Septic tank filter field	Recreational areas
Dundee-Goldman-Tensas—Continued							
Tensas	Poor	Poor to a depth of 22 inches; poor to fair below 22 inches.	Not suitable.	Not suitable.	Very severe: high shrink-swell potential; low bearing capacity; high water table; flooding.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table; flooding.	Severe: high water table; surface texture.
Loamy alluvial land and Robinsonville soils, overflow, 0 to 5 percent slopes (LrC):							

interpretations—Continued

limitation for—	Soil features that adversely affect suitability for engineering purposes						
	Farm ponds or reservoirs		Road location	Irrigation		Drainage (open ditch)	Grading or leveling
Light industry	Reservoir area	Embankment		Sprinkler	Furrow or contour border		
Very severe: high shrink-swell potential; low bearing capacity; high water table; flooding; high corrosion potential.	None	High shrink-swell potential; low strength and stability.	High shrink-swell potential; high water table; low traffic-supporting capacity; flooding.	Short irregular slopes; slow intake.	Slope; not generally feasible because of slope.	Very slow permeability; high water table; flooding; deep cuts generally needed through ridges.	Slope; wetness in swales; generally not feasible because of large amount of earth to be moved.
Very severe: overflow hazard.	Seepage in places; subject to overflow.	Low to moderate strength and stability; highly erodible.	Subject to severe overflow.	Not practical because of overflow hazard.	Not practical because of overflow hazard.	Not practical because of overflow hazard.	Not practical because of overflow hazard.
Very severe: overflow hazard.	High seepage in places; subject to overflow.	Low to moderate strength and stability; highly erodible.	Subject to severe overflow.	Not practical because of overflow hazard.	Not practical because of overflow hazard.	Not practical because of overflow hazard.	Not practical because of overflow hazard.
Severe: low bearing capacity; high water table; moderate shrink-swell potential; high corrosion potential.	None	Moderate strength and stability; moderate shrink-swell potential.	High water table; moderate traffic-supporting capacity.	Moderately slow intake.	None	Slow permeability; high water table.	Wetness; workable for somewhat limited periods.
Severe: low bearing capacity; high water table; moderate shrink-swell potential; high corrosion potential.	None	Moderate strength and stability; moderate shrink-swell potential.	High water table; moderate traffic-supporting capacity.	Moderately slow intake.	None	Slow permeability; high water table.	Wetness; texture; workable for somewhat limited periods.
Severe: low bearing capacity; high water table; high shrink-swell potential; high corrosion potential.	Seepage in places if dug out below a depth of 16 inches.	Low strength and stability; high shrink-swell potential.	High shrink-swell potential; high water table; low traffic-supporting capacity.	Very slow intake when cracks seal; trafficability.	Very slow intake; poor material for borders and delivery canals because of cracking.	Very slow permeability; high water table.	Texture; wetness; difficult to work; workable for limited periods.

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TABLE 6.—*Engineering*

Mapping units and map symbols	Suitability as source of—				Degree and kind of		
					Dwellings with—		
	Topsoil	Road subgrade	Road subbase	Sand	Public or community sewage system	Septic tank filter field	Recreational areas
Newellton clay, 1 to 5	Poor....	Poor to a	Not suitable	Poor: in	Severe: low	Very severe:	Severe: high

interpretations—Continued

limitation for—	Soil features that adversely affect suitability for engineering purposes						
Light industry	Farm ponds or reservoirs		Road location	Irrigation		Drainage (open ditch)	Grading or leveling
	Reservoir area	Embankment		Sprinkler	Furrow or contour border		
Severe: low bearing capac-	Seepage in places if	Low strength and stabil-	High shrink-swell poten-	Very slow intake when	Slope; very slow intake;	Not needed_ _	Slope; texture; not generally

TABLE 6.—*Engineering*

Mapping units and map symbols	Suitability as source of—				Degree and kind of		
					Dwellings with—		
	Topsoil	Road subgrade	Road subbase	Sand	Public or community sewage system	Septic tank filter field	Recreational areas
Newellton-Sharkey clays, undulating (NyC):							
Newellton	Poor	Poor to a depth of 16 inches; fair below 16 inches.	Not suitable to a depth of 16 inches; suitable with additives below 16 inches.	Poor: in places very fine sandy loam available below a depth of 16 inches.	Severe: low bearing capacity; high water table; high shrink-swell potential.	Very severe: slow percolation; low bearing capacity; high shrink-swell potential; high water table.	Severe: high water table; texture of surface layer.
Sharkey	Poor	Poor	Not suitable.	Not suitable.	Very severe: high shrink-swell potential; low bearing capacity; high water table; flooding.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table; flooding.	Severe: high water table; texture of surface layer; flooding.
Oil-waste land (Ow).[1]							
Robinsonville very fine sandy loam, 1 to 5 percent slopes (RbC).	Good	Fair to good	Poor to fair	Fair: in places loamy fine sand available below a depth of 36 inches.	Very slight	Slight	Very slight

interpretations—Continued

limitation for—	Soil features that adversely affect suitability for engineering purposes						
Light industry	Farm ponds or reservoirs		Road location	Irrigation		Drainage (open ditch)	Grading or leveling
	Reservoir area	Embankment		Sprinkler	Furrow or contour border		
Severe: low bearing capacity; high water table; high shrink-swell potential; high corrosion potential.	Seepage in places if dug out below a depth of 16 inches.	Low strength and stability; high shrink-swell potential.	High water table; high shrink-swell potential; low traffic-supporting capacity.	Short irregular slopes; very slow intake; trafficability.	Slope; very slow intake; not generally feasible because of slope.	High water table; very slow permeability; deep cuts generally needed through ridges.	Texture; slope; wetness; difficult to work; workable for limited periods; large amount of earth to be moved.
Severe: low bearing capacity; high water table; high shrink-swell potential; high corrosion potential; flooding.	None	High shrink-swell potential; low strength and stability.	High water table; high shrink-swell potential; low traffic-supporting capacity; flooding.	Short irregular slopes; very slow intake after cracks seal; trafficability.	Slope; very slow intake; not generally feasible because of slope.	High water table; very slow permeability; subject to flooding.	Texture; slope; wetness; difficult to work; workable for limited periods; large amount of earth to be moved.
Very slight	High seepage in places.	Low to moderate strength and stability; moderately to highly erodible; subject to piping and seepage.	Highly erodible on slopes.	Slope	Slope; not generally feasible because of slope.	Not needed	Slope; not generally feasible because of slope.
Severe: low bearing capacity; high water table; high shrink-swell potential; high corrosion potential.	None	High shrink-swell potential; low strength and stability.	High water table; high shrink-swell potential; low traffic-supporting capacity.	Moderately slow intake.	None	Very slow permeability; high water table.	Wetness; subsoil texture; somewhat difficult to work; workable for limited periods.
Severe: low bearing capacity; high water table; high shrink-swell potential; high corrosion potential.	None	High shrink-swell potential; low strength and stability.	High water table; high shrink-swell potential; low traffic-supporting capacity.	Very slow intake when cracks seal; trafficability.	Very slow intake; poor material for borders and delivery canals because of cracking.	Very slow permeability; high water table.	Texture; wetness; difficult to work; workable for limited periods.
Very severe: low bearing capacity; very high water table; high shrink-swell potential; high corrosion potential; subject to overflow.	Subject to overflow.	High shrink-swell potential; low strength and stability.	Very high water table; high shrink-swell potential; low traffic-supporting capacity; subject to overflow.	Not practical because of overflow hazard.	Not practical because of overflow hazard.	Not practical because of overflow hazard.	Not practical because of overflow hazard.

TABLE 6.—*Engineering*

interpretations—Continued

limitation for—	Soil features that adversely affect suitability for engineering purposes						
	Farm ponds or reservoirs		Road location	Irrigation		Drainage (open ditch)	Grading or leveling
Light industry	Reservoir area	Embankment		Sprinkler	Furrow or contour border		
Severe: low bearing capacity; high water table; high shrink-swell potential; high corrosion potential.	None	High shrink-swell potential; low strength and stability.	High water table; high shrink-swell potential; low traffic-supporting capacity.	Very slow intake when cracks seal; traffica-bility.	Very slow intake; poor material for borders and delivery canals because of cracking.	Very slow permeability; high water table.	Texture; wetness; difficult to work; workable for limited periods.
Severe: low bearing capacity; high water table; shrink-swell potential; high corrosion potential.	None	High shrink-swell potential; low strength and stability.	High water table; high shrink-swell potential; low traffic-supporting capacity.	Short irregular slopes; very slow intake when cracks seal; traffic-ability.	Slope; very slow intake; generally not feasible because of slope.	Very slow permeability; high water table; deep cuts generally needed through ridges.	Texture; slope; difficult to work; workable for limited periods; large amount of earth to be moved.
Very severe: low	None	High shrink-	High water	Short irreg-	Slope; very	Very slow	Texture; slope;

TABLE 6.—*Engineering*

Mapping units and map symbols	Suitability as source of—				Degree and kind of		
					Dwellings with—		
	Topsoil	Road subgrade	Road subbase	Sand	Public or community sewage system	Septic tank filter field	Recreational areas
Tensas-Alligator Dundee—Continued							
Dundee	Fair	Fair	Not suitable.	Not suitable.	Slight	Severe: slow percolation.	Moderate: texture of surface layer.
Tensas-Alligator clays, gently undulating (TcB):							
Tensas	Poor	Poor to a depth of 22 inches; poor to fair below 22 inches.	Not suitable.	Not suitable.	Severe: high shrink-swell potential; low bearing capacity; high water table.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table.	Severe: high water table; texture of surface layer.
Alligator	Poor	Poor	Not suitable.	Not suitable.	Very severe: high shrink-swell potential; low bearing capacity; high water table; flooding.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table; flooding in swales.	Very severe: high water table; texture of surface layer; flooding.
Tensas-Alligator clays, undulating (TcD):							
Tensas	Poor	Poor to a depth of 22 inches; poor to fair below 22 inches.	Not suitable.	Not suitable.	Severe: high shrink-swell potential; low bearing capacity; high water table.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table.	Severe: high water table; texture of surface layer.
Alligator	Poor	Poor	Not suitable.	Not suitable.	Very severe: high shrink-swell potential; low bearing capacity; high water table; flooding.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table; flooding.	Very severe: high water table; texture of surface layer; flooding.
Tunica clay (Tu).	Poor	Poor to a depth of 25 inches; poor to fair below 25 inches.	Not suitable.	Not suitable.	Severe: high shrink-swell potential; low bearing capacity; high water table.	Very severe: slow percolation; high shrink-swell potential; low bearing capacity; high water table.	Severe: high water table; texture of surface layer.

interpretations—Continued

limitation for—	Soil features that adversely affect suitability for engineering purposes						
Light industry	Farm ponds or reservoirs		Road location	Irrigation		Drainage (open ditch)	Grading or leveling
	Reservoir area	Embankment		Sprinkler	Furrow or contour border		
Slight	None	Moderate shrink-swell potential; moderate strength and stability.	Moderate traffic-supporting capacity; moderately to highly erodible.	Short irregular slopes; trafficability.	Slope; generally not feasible because of slope.	Not needed	Slope; very large amount of earth to be moved.
Severe: low	None	High shrink-	High water	Short irregu-	Slope; very	Not needed	Texture; wet-

The percolation rate is one of the properties that has to be considered in selecting sites for dwellings served by septic tank systems. The percolation rate (see table 5) indicates the absorptive capacity of the soil. Other factors to be considered are the duration and frequency of flooding and the occurrence of a seasonal high water table.

Table 6 shows the degree of limitation of the soils for use as recreational areas and the soil features that adversely affect suitability. Trafficability, the soil property considered most significant, is the ease with which people can move about, on foot, on horseback, or with a small vehicle, such as a golf cart. The water table, the hazard of overflow, the slope, and the soil texture all affect trafficability. It is difficult to establish a good turf on

prefer the smaller trees for nesting. Choice foods are browntop millet, corn, grain sorghum, wheat, soybeans, and grass seeds. They require water daily, within short distances of feeding areas.

Dabbling ducks, such as mallards, pintails, and teal, prefer to feed in water less than 28 inches deep. They like acorns, browntop millet, wild millet, corn, rice, and smartweed. Diving ducks, such as the ringnecked, scaup, and canvasback, can feed completely submerged. Ducks sometimes feed in unflooded fields of corn and other grain; they prefer fields of 20 acres or more.

Swamp rabbits prefer wooded streams and drains or semiswamps. Cottontails prefer well-drained brier patches, crop fields, fence rows, and grassy meadows. Rabbits eat

TABLE 7.—*Wildlife groups*

[Refer to "Guide to Mapping Units" to find wildlife classification for any given soil]

Wildlife group	Potential for habitat elements						Potential as habitat for—		
	Grain and seed crops	Grasses and legumes	Wild herbaceous dryland plants	Wild herbaceous wetland plants	Hardwoods and associated understory	Shallow water impoundments	Quail, dove, and rabbit	Deer and squirrel	Duck
oup 1. Sandy, somewhat xcessively drained soils; low vailable water capacity; lominantly on ridges and in wales; small acreage cleared and sed mainly for pasture.	Moderate--	Moderate--	Moderate----	Poor--------	Moderate----	Poor------	Moderate----	Moderate.	Poor.
oup 2. Loamy, somewhat poorly rained to well-drained soils; high vailable water capacity; slow to oderate permeability; level to ently sloping; on ridges and in wales; large acreage cleared and sed for cultivated crops and asture; best potential in parish for ove and quail habitat; uncleared reas excellent deer range.	Good-----	Good-----	Moderate----	Poor--------	Good-------	Poor------	Good-------	Good---	Moderate.
oup 3. Loamy and clayey, poorly rained to somewhat poorly drained oils; moderate available water apacity; slow permeability; ominantly level; small acreage leared and used for cultivated rops and pasture; one of best eer ranges in parish; if drained, ood habitat for dove and quail.	Good-----	Good-----	Poor--------	Good-------	Good-------	Good-----	Moderate to good.	Good---	Good.
oup 4. Clayey, poorly drained to omewhat poorly drained soils; oderate available water capacity; ery slow permeability; ominantly on ridges and in wales; small acreage cleared and sed for cultivated crops and asture; deer habitat one of best n parish; quail and dove habitat mited to ridges because of wetness n swales; duck habitat during nd after heavy rain.	Moderate--	Moderate--	Poor--------	Moderate----	Good-------	Poor------	Moderate----	Good---	Moderate.
oup 5. Sandy and loamy, well-rained to excessively drained soils; ently sloping; on ridges and in wales on river side of levee; sub-ct to overflow; small acreage eared and used mainly for pas-ure; duck habitat poor because of oil permeability.	Poor------	Poor------	Moderate----	Poor--------	Moderate----	Poor------	Moderate----	Poor to moderate.	Poor.
up 6. Clayey, poorly drained soils; ery slow permeability; subject to equent overflow; level; on ridges nd in swales; most of acreage un-eared; slight understory growth.	Poor------	Poor------	Poor--------	Moderate----	Moderate----	Poor------	Poor--------	Moderate.	Moderate.
oup 7. Soils affected by salt water nd oil; little or no vegetation.	Poor------	Poor------	Poor--------	Poor--------	Poor--------	Poor------	Poor--------	Poor----	Poor.

wildlife food and cover. A rating of *moderate* indicates conditions that limit the variety of plants but permit vigorous growth of a few choice species. A rating of *poor* indicates limitations so severe that only one or two species grow well; generally, these species are of little value to wildlife.

"Wild herbaceous wetland plants" refers to plants that grow in moist to wet places. Examples are smartweed, rush, beakrush, sedge, wild millet, and smutgrass. Wetland food plants do not include submerged and floating aquatic plants that produce food for aquatic wildlife. A rating of *good* indicates conditions favorable for the establishment and vigorous growth of a variety of uncultivated herbaceous wetland plants that produce choice wildlife food. A rating of *moderate* indicates conditions that limit the variety of plants but permit vigorous growth of a few choice species. A rating of *poor* indicates limitations so severe that only one or two species grow well; generally, these species are of little value to wildlife.

"Hardwoods and associated understory" refers to nonconiferous trees, shrubs, and vines that produce fruits, nuts, buds, twigs, or foliage used as food by wildlife, and that commonly are established naturally. Examples are white oak, red oak, gum, pecan, honeysuckle, grape, smilax, briers, rattan, and hackberry. A rating of *good* indicates conditions favorable for the vigorous growth of a variety of trees and shrubs that are important wildlife food, and for rapid and vigorous development of the understory. A rating of *moderate* indicates conditions favorable for the vigorous growth of a few species of trees and shrubs that are choice wildlife food and of many other species that are not choice food. It also indicates somewhat retarded growth of the understory. A rating of *poor* indicates conditions under which few or no choice species grow, or growth is too sparse to be significant.

"Shallow water impoundments" are impoundments generally not more than 4 feet deep. They provide habitat for ducks. A rating of *good* indicates that the soil is nearly level and has impervious layers that retard seepage. A rating of *poor* indicates that the soil is sloping, has

covered with soil, water, and, to a lesser extent, beds of salt. The whole of the earth is surrounded by air.

The earth is about 3 billion years old. During this time, lava has flowed from cracks and volcanoes, huge masses of ice have moved from the poles toward the equator and spread over plains and hills, and melting waters from these ice sheets have formed huge rivers that have carved wide valleys as they carried debris to the seas.

Tensas Parish is in the valley of one such huge river—the Mississippi. As it has done in the past, the river deposits massive loads of mud whenever it reaches flood stage and pours over its banks.

Factors of Soil Formation

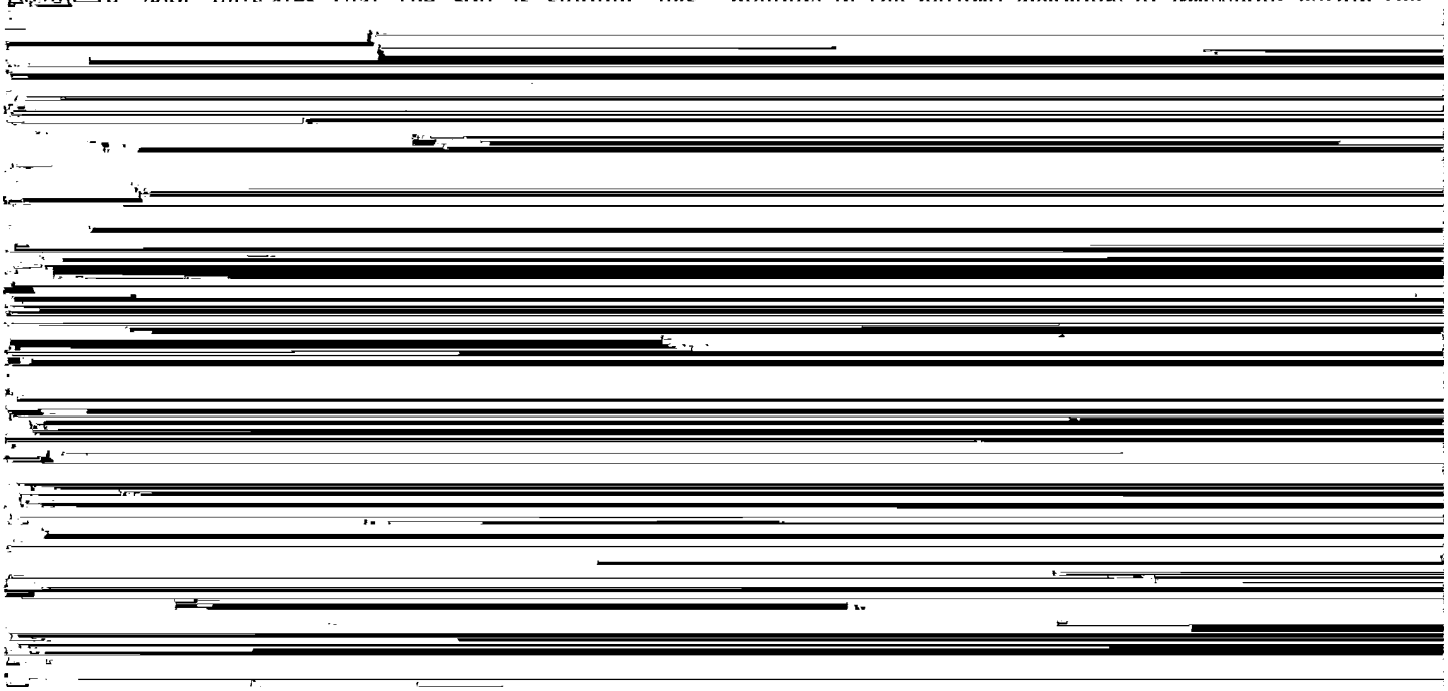
The five major factors that affect soil formation are plants and animals, climate, parent material, relief, and age of landform. These factors are discussed separately in the following pages.

Plants and animals

Plants help in the formation of soils by sending their roots into the earthy parent material. Plant roots, even though small, are strong. They tend to break up the soil, rearrange the soil particles, force openings into the lower part of the soil, and modify porosity. Animals burrow beneath the surface and mix the soil. Earthworms and crayfish for example, are active in the soils of Tensas Parish. When animals and plants die, their remains decay to form humus in the soil. The humus serves as a storehouse for plant nutrients.

The native vegetation in Tensas Parish consisted mainly of southern hardwoods. Soils that formed under hardwoods are medium to low in organic-matter content.

Grass vegetation influenced the soils in several small areas in the parish. In these areas the soils contain a large amount of organic matter and are dark colored to a depth of 2 feet. They are in 3- to 30-acre tracts in the vicinity of Indian mounds. Presumably, the Indians built these mounds in the natural clearings of grassland within the



overspread their banks. As transporting power is lost, sand is dropped first, silt next, and clay last. Consequently, the natural levees are sandy and silty. The soils that developed in this parent material are light colored, permeable, and somewhat poorly drained to well drained. On the youngest natural levees are Robinsonville, Commerce, and Bruin soils. On the older natural levees are Dundee and Goldman soils.

Between the river and the natural levees are deposits of sand, silt, and clay, called point-bar deposits. Alluvial land types are on the most recent deposits. Crevasse soils formed on the young point bar deposits that are stabilized

no more than 150 feet wide. The difference in elevation is about 1 to 6 feet. Water generally stands in the swales during winter and early in spring. An example of a soil that has ridge-swale relief is Alligator clay, undulating.

Age of landform

Time is required for soil formation—usually long periods. The length of time that soil-forming forces have been able to act on parent material is commonly reflected in the characteristics of the soil.

The soils in Tensas Parish range from young soils that have little or no development to older soils that have some-

soils, it is assumed that the lower the pH, that is, the more acid the soil, the more leaching, and presumably, the older the soil.

Representative Soil Horizons

The action of the soil-forming factors is reflected in the soil profile, which is a succession of horizons, or layers, from the surface down to unaltered parent material. The horizons differ in one or more properties, such as color, texture, thickness, structure, consistence, porosity, and reaction.

The major horizons in the soils of the parish are ochric epipedons, cambic horizons, and argillic horizons.

All of the soils of the parish have ochric epipedons (A horizons). Ochric epipedons are typically light colored and contain some organic matter. Even if they are dark colored, they are too thin to qualify as mollic epipedons.

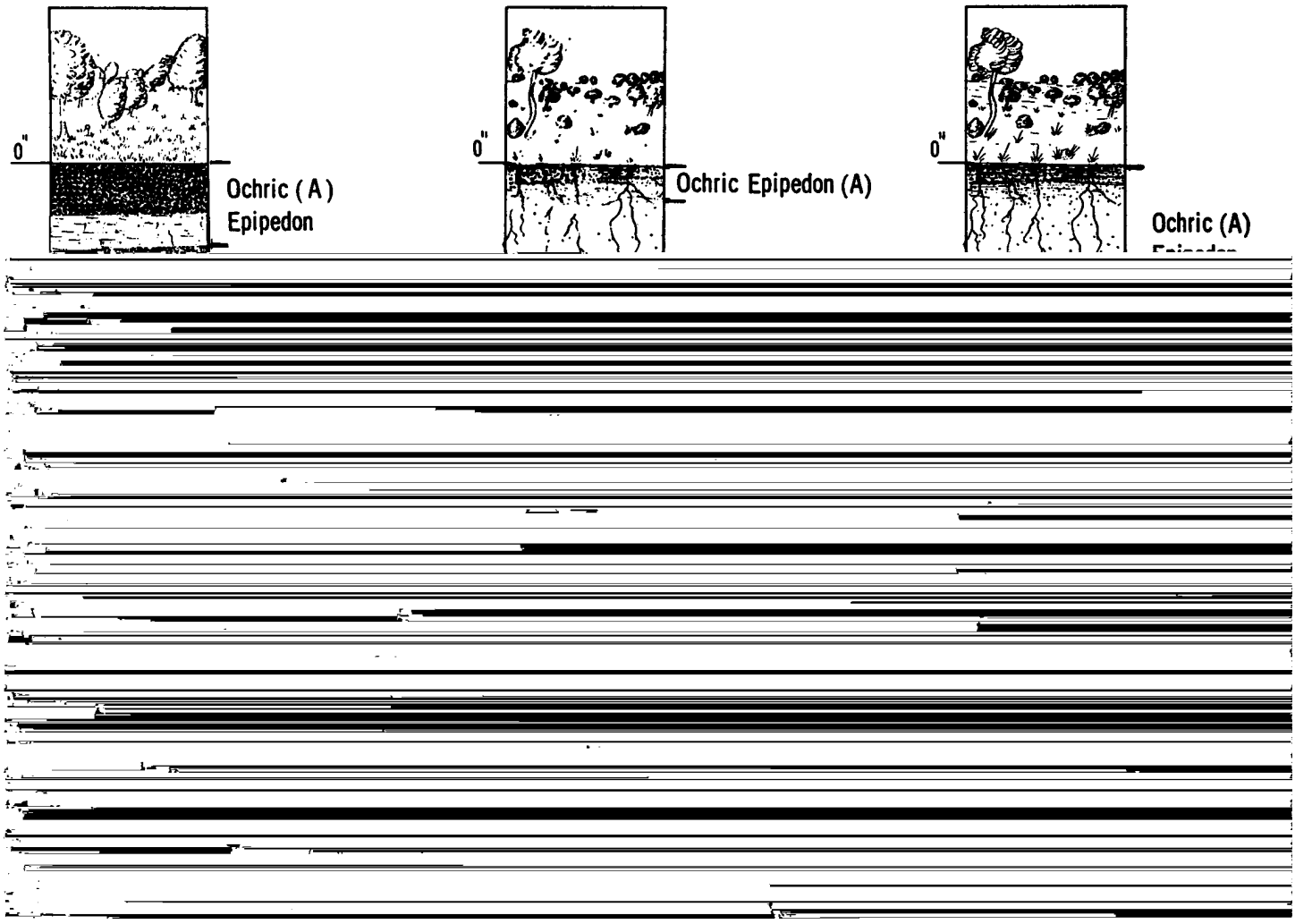
The argillic and cambic horizons are typically subsoil horizons, but after erosion or land leveling, they may occur at the surface. Three soils of the parish, Dundee, Goldman, and Tensas, have argillic horizons. Argillic horizons have a significant accumulation of silicate clays. The clay films on the surface of peds indicate a downward movement of clay from the epipedons (A horizons).

The Newellton, Tunica, Commerce, and Bruin are examples of soils that have cambic (B) horizons. These are horizons in which soil-forming processes have altered the earthy parent material enough to form structure, to liberate free iron oxides and to form silicate clays.

Included with the Commerce soils are a few small areas that have mollic epipedons, or a thick, dark-colored A horizon in which there is a significant accumulation of organic matter. These areas are adjacent to Indian mounds and are included with Commerce soils.

Some of the soils of the parish lack cambic or argillic horizons. The letter "C" is used to designate horizons below the epipedon in these soils. The Crevasse soil, for example, lacks diagnostic horizons. It has an ochric epipedon over earthy parent material that is only slightly altered.

Figure 9 shows three strongly contrasting soil profiles. The Dundee soil has an argillic horizon. The Crevasse soil, which is very young, lacks developed horizons. The Leon soil, though not correlated in Tensas Parish, is used to show a soil that formed under different environmental conditions. It has a developed spodic subsoil horizon. Spodic horizons have an accumulation of iron and organic matter that has been leached from the overlying surface horizons.



Grouping of the Soils in Higher Categories

The purpose of soil classification is to help us remember the significant characteristics of soils, to assemble our knowledge about them, to see their relationships to one another in their environment, and to develop principles of their behavior and response to manipulation. Then through the use of soil maps, these principles can be applied to specific fields and other tracts of land.

For this purpose, the current classification system was designed (*14*). Adopted in 1965 in the United States, by the Cooperative Soil Survey, it replaces the revised classi-

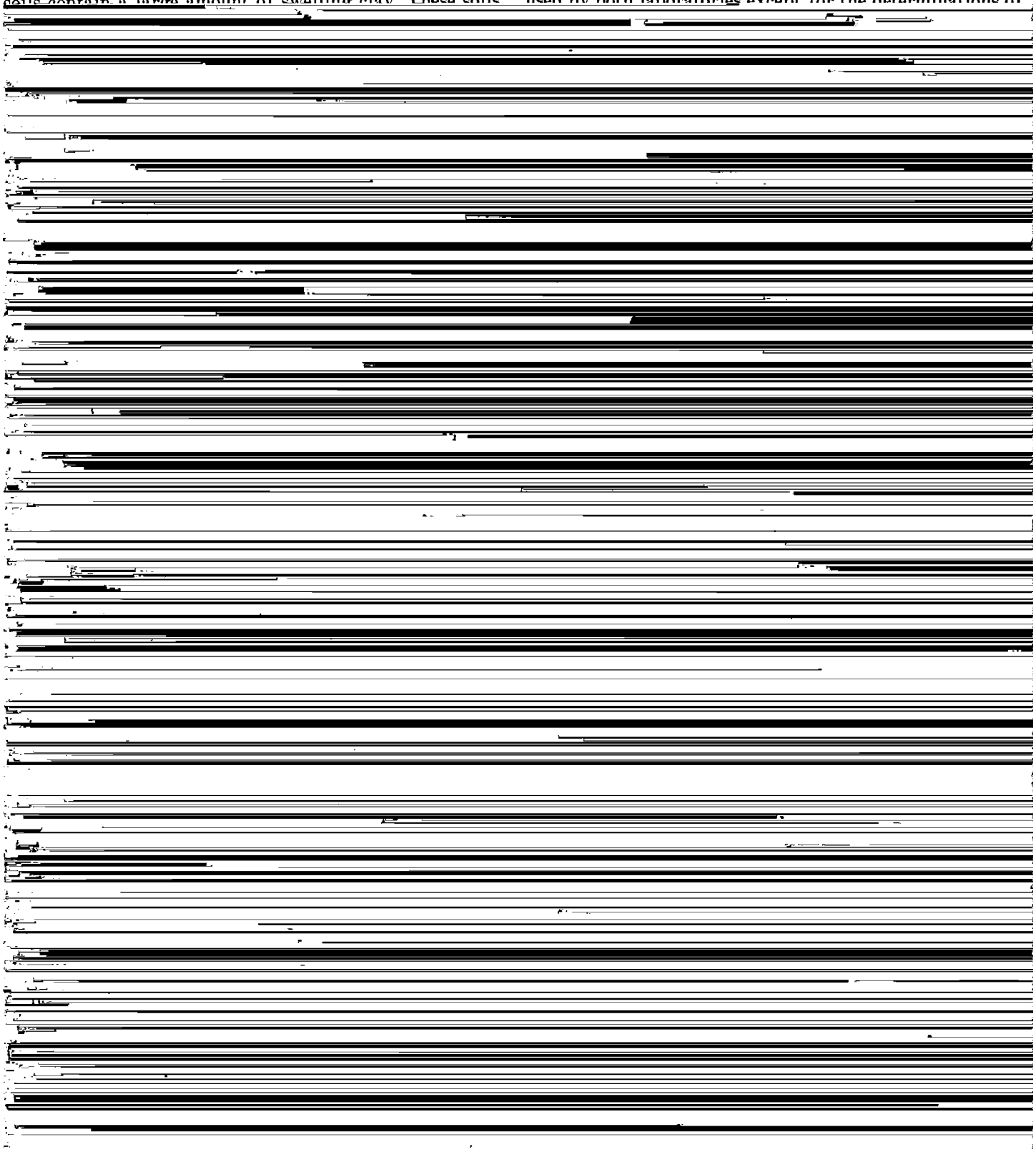
The subgroups are subdivisions of the great groups. They consist of the central (typic) segments or intergrades that have, in addition to properties of the great group, one or more properties of another great group, suborder, or order.

The families are separated within a subgroup primarily on the basis of properties important to the growth of plants or to engineering behavior. These properties include texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence.

The series is a group of soils that have major horizons

Haplaquept subgroup. Sharkey, Alligator, and Tunica soils contain a large amount of swelling clay. These soils

an oven-dry basis. Essentially the same procedures were used by both laboratories except for the determinations of



Interpretation of Soil Characterization Data [6]

All of the soils sampled, the analyses of which are shown in table 9, formed in alluvium of the Mississippi River.

Alligator soils are more acid than Sharkey soils and have less available phosphorus and higher bulk density. Both soils contain carbonates, but the carbonates are at a greater depth in Alligator soils. The more acid reaction and the greater depth to carbonates indicate that Alligator soils are more strongly leached than Sharkey soils. These differences are presumed to be caused by differences in age.

than the other two soils because they are more strongly leached and they have the greater translocation of clays.

Bruin, Commerce, and Robinsonville soils are the least acid of all the soils analyzed. They are high in phosphorus. Alligator soils are the most acid and are low in phosphorus. Bruin and Commerce soils have the highest available water capacity (⅓-bar minus 15-bar moisture) of all the soils analyzed. They also have the highest silt content.

Estimates of dominant clay minerals are given in table 10. Samples were taken from certain horizons of the same soils selected for the analyses reported in table 9. The

TABLE 9.—*Physical and*

Soil type and sample number	Horizon	Depth	Particle-size distribution							
			Sand						Silt (0.05–0.002 mm.)	Clay (less than 0.002 mm.)
			Total	Very coarse (2–1 mm.)	Coarse (1–0.5 mm.)	Medium (0.5–0.25 mm.)	Fine (0.25–0.10 mm.)	Very fine (0.10–0.05 mm.)		
		In.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Commerce silt loam (S63La–54–1).	Ap1	0 to 6	26.2	(1)	(2)	.2	3.1	22.9	64.1	9.7
	Ap2	6 to 10	24.5	(1)	(2)	.1	2.9	21.5	63.5	12.0
	B2	10 to 19	12.4	(1)	(2)	(2)	2.1	10.3	55.7	31.9
	B3	19 to 25	16.5	(1)	(1)	.1	1.8	14.6	58.4	25.1
	C1	25 to 32	22.4	(2)	.2	.2	1.0	21.0	56.7	20.9
	A1b1	32 to 36	15.9	(1)	.1	.1	.7	15.0	58.4	25.7
	C2	36 to 44	24.4	(2)	.2	.2	1.1	22.9	62.2	13.4
	C3	44 to 54	14.6	(2)	.1	.1	.8	13.6	70.9	14.5
	A1b2	54 to 60	1.5	(1)	.1	(2)	.1	1.3	56.5	42.0

chemical data—Continued

Water content		Bulk density	Extractable cations (meq. per 100 grams of soil)				Extractable acidity	Cation exchange capacity (NH_4OAc)	Organic carbon	Reaction (1:1)	Extractable iron as Fe	Available phosphorus
			Extractable bases									
⅓-bar	15-bar	⅓-bar	Ca	Mg	Na	K						
Pct.	*Pct.*	*Gm./cc.*					*Meq./100 gm.*	*Meq./100 gm.*	*Pct.*	*pH*	*Pct.*	*Parts per million*
-------	5.2	----------	7.7	2.3	(2)	.7	3.0	10.4	.93	6.6	.4	----------
17.7	6.1	1.55	8.5	2.2	.1	.4	3.1	11.4	.60	6.1	.5	----------
26.1	15.2	1.43	19.5	5.2	.2	.7	4.2	23.6	.59	6.8	.8	----------
24.8	12.4	1.36	16.7	4.6	.2	.6	2.4	19.9	.44	7.2	.7	----------
25.4	10.5	1.32	14.8	4.5	.3	.5	--------	17.6	.33	7.6	.7	----------
26.7	13.1	1.30	16.8	5.6	.4	.6	--------	20.7	.41	7.7	.8	----------
29.0	7.1	1.32	10.1	3.6	.3	.4	--------	12.8	.20	7.9	.6	----------
31.0	7.9	1.31	12.0	3.8	.2	.5	--------	14.1	.20	8.0	.6	----------
32.5	18.9	1.28	23.5	7.5	.3	1.0	--------	28.9	.18	7.7	1.0	----------
-------	11.1	----------	15.1	4.6	.2	.7	--------	18.3	.28	7.8	.7	----------
32.1	18.2	1.28	22.0	6.4	.3	1.0	--------	26.3	.43	7.7	.8	----------
18.4	4.9	1.34	6.1	2.5	.1	.3	3.1	9.5	.59	6.1	.5	----------
13.4	5.2	1.53	5.3	1.9	.1	.2	3.9	9.0	.41	5.7	.4	----------
20.1	13.0	1.59	12.0	3.6	.4	.5	9.1	20.2	.45	5.2	.6	----------
22.5	12.8	1.48	11.4	3.4	.6	.5	8.8	19.6	.33	5.2	.6	----------
19.4	9.6	1.48	9.6	2.8	.6	.4	6.9	15.9	.25	5.4	.7	----------
18.3	7.4	1.45	7.5	1.9	.4	.3	4.9	12.0	.16	5.5	.6	----------
23.5	8.0	1.39	8.7	2.0	.4	.3	5.0	13.0	.13	5.4	.7	----------
17.7	5.0	1.40	6.7	1.6	.3	.3	3.3	9.5	.10	5.8	.6	----------
19.4	7.8	1.43	9.4	2.5	.4	.4	3.7	12.9	.09	6.1	.8	----------
--------	8.9	----------	11.0	2.9	.5	.5	3.6	14.9	.11	6.1	1.0	----------
--------	3.0	----------	4.6	1.1	.2	.2	1.9	6.4	.06	6.4	.6	----------
--------	7.0	1.49	7.7	2.1	.2	.3	4.8	11.3	.71	5.7	--------	50
--------	10.5	1.42	10.2	2.7	.2	.2	5.4	14.8	.34	6.0	--------	80
--------	8.3	1.39	9.4	3.3	.2	.2	6.1	13.1	.21	5.4	--------	145
--------	6.5	1.34	6.7	1.9	.3	.2	5.4	10.6	.14	5.2	--------	165
--------	7.0	1.32	6.9	2.1	.4	.2	5.5	11.6	.15	5.2	--------	190
--------	8.6	1.45	8.7	3.1	.3	.2	5.7	14.3	.14	5.4	--------	190
--------	6.4	1.40	7.5	2.5	.3	.2	3.9	11.2	.11	5.6	--------	180
--------	------	----------	------	------	------	------	--------	--------	--------	--------	--------	----------
--------	------	----------	------	------	------	------	--------	--------	--------	--------	--------	----------
23.6	11.4	1.51	8.2	1.8	1	.7	3.7	10.5	.61	5.6		285

n 0.2 micron clay

e amounts]

Mica-illite		Mica	Kaolinite		Quartz	
2–0.2	<0.2	<0.2	2–0.2	<0.2	2–0.2	<0.2
Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct,*	*Pct.*	*Pct.*
10 to 40	<10	------	------	<10	<10	-------
10 to 40	<10	------	------	----	<10	-------
10 to 40	--------	------	------	----	<10	-------
10 to 40	--------	<10	<10	----	<10	-------
10 to 40	--------	<10	------	<10	<10	-------
<10	--------	<10	<10	<10	<10	-------
>40	--------	------	<10	----	<10	-------
10 to 40	<10	------	<10	----	<10	-------
10 to 40	<10	------	<10	----	<10	-------
<10	--------	------	------	----	<10	-------
<10	--------	------	------	----	----	-------
10 to 40	--------	------	<10	----	<10	-------
10 to 40	<10	------	------	<10	<10	-------
10 to 40	<10	------	------	----	------	<10
10 to 40	<10	------	------	----	<10	-------
10 to 40	<10	------	<10	<10	<10	-------
10 to 40	--------	------	<10	----	<10	-------
10 to 40	--------	------	------	----	<10	-------
10 to 40	<10	------	------	<10	<10	-------
<10	10 to 40	------	<10	----	------	<10
10 to 40	--------	------	------	<10	<10	<10

General Nature of the Parish

Tensas Parish, once a part of Concordia and Madison Parishes, was established by Acts of the Louisiana State Legislature in 1843 and 1861. It was named for a tribe of Indians who lived within its boundaries when it was first settled by the French. St. Joseph is the parish seat.

The population was slightly more than 19,000 in 1900 but decreased to less than 12,000 by 1960. It is largely rural. Each of the three towns in the parish—St. Joseph, Newellton, and Waterproof—has a population of less than 2,000.

Farming

Tensas Parish has always been a farming area. The early economy was based on the plantation system, and cotton was the main crop.

The total acreage of cotton decreased steadily after 1945, but the yield per acre increased because of the development of better varieties, improved drainage, the use of only the more productive soils for the crop, and the improvement in methods of management.

The acreage of soybeans increased from 2,487 in 1945 to 21,222 in 1964. Soybeans grow well on most of the soils

John, in the southernmost part of the parish, is the site of a recycling plant. The largest of the more recently discovered fields are Killens Ferry, Locust Ridge, Rodney Island, and Buckhorn. There are natural gas extraction plants at both Locust Ridge and Killens Ferry.

Climate

Tensas Parish has the humid, warm, temperate climate characteristic of the southeastern part of the United States. In summer the prevailing southerly winds provide a moist tropical climate. Occasionally, the pressure distribution causes hot dry weather, which if prolonged, develops into droughts of varying severity. In winter the parish is subjected alternately to moist tropical air and dry polar air, and sometimes there are sudden and extreme changes in temperature. Cold spells are usually of short duration.

Freezing temperatures occur on an average of 34 days per year, and temperatures of 90° F. or higher on an average of 87 days. From May through October, temperatures are 90° or higher about 11 percent of the time and 80° or higher about 37 percent of the time. From November through April, temperatures are 70° or higher about 15 percent of the time and below 50° about 32 percent of the time. Temperatures of 20° or lower occur at least once each

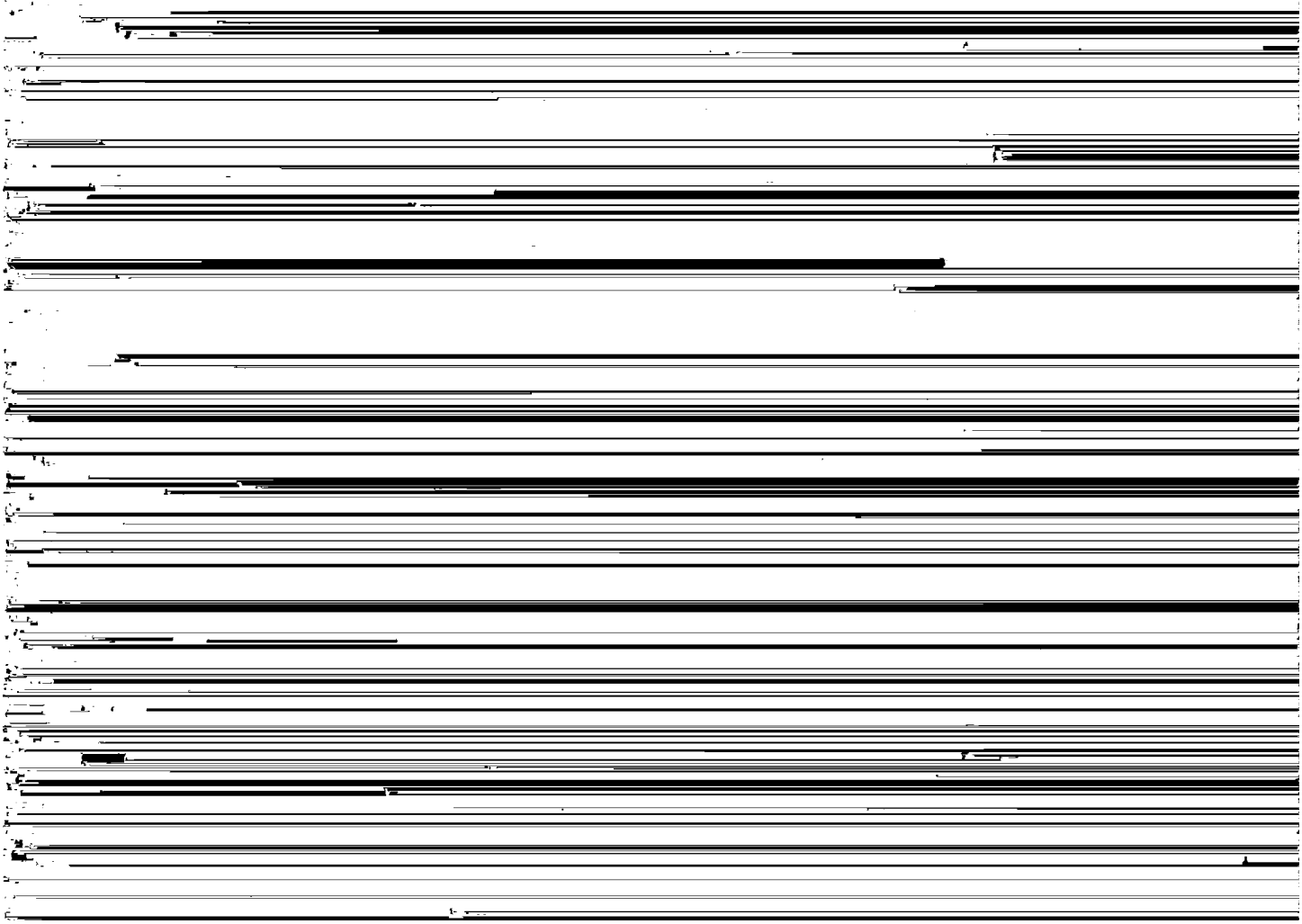


TABLE 11.—*Temperature and precipitation at St. Joseph, La.*

[Elevation 78 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year 1924	Wettest year 1940	Average snowfall
	°F.	°F.	°F.	In.	In.	In.	In.
December	51.1	88	10	5.80	3.36	9.57	0.5
January	50.2	84	−8	5.94	6.68	2.89	2.4
February	52.6	87	2	5.53	3.48	7.48	.2
Winter	51.3	88	−8	17.27	13.52	19.94	3.1
March	58.3	92	19	6.25	5.28	4.53	[3]
April	65.1	94	29	5.35	3.49	21.80	0
May	72.6	101	32	4.67	4.35	1.22	0
Spring	65.3	101	19	16.27	13.12	27.55	[3]
June	79.3	103	47	3.64	1.56	4.18	0
July	81.4	103	53	5.05	.12	16.04	0
August	81.2	104	52	3.21	.31	2.35	0
Summer	80.6	106	47	11.90	1.99	22.57	0
September	75.9	106	37	2.40	1.62	2.76	0
October	66.2	96	23	2.00	.04	1.39	0
November	55.9	90	16	4.08	.13	9.23	[3]
Fall	66.0	106	16	8.48	1.79	13.38	[3]
Year	65.8	106	−8	53.92	30.42	83.44	3.1

[1] Average temperature based on data for the period 1931–52; highest and lowest temperatures based on data for the period 1908–58.

[2] Average precipitation based on data for the period 1931–52; driest and wettest years based on data for the period 1891–1958.

[3] Trace.

Physiography and Geology [7]

Tensas Parish is an alluvial area that is largely between the Mississippi River and the eastern escarpment of Macon Ridge. Its landforms include flooded back swamps and the natural levees built up by aggrading streams.

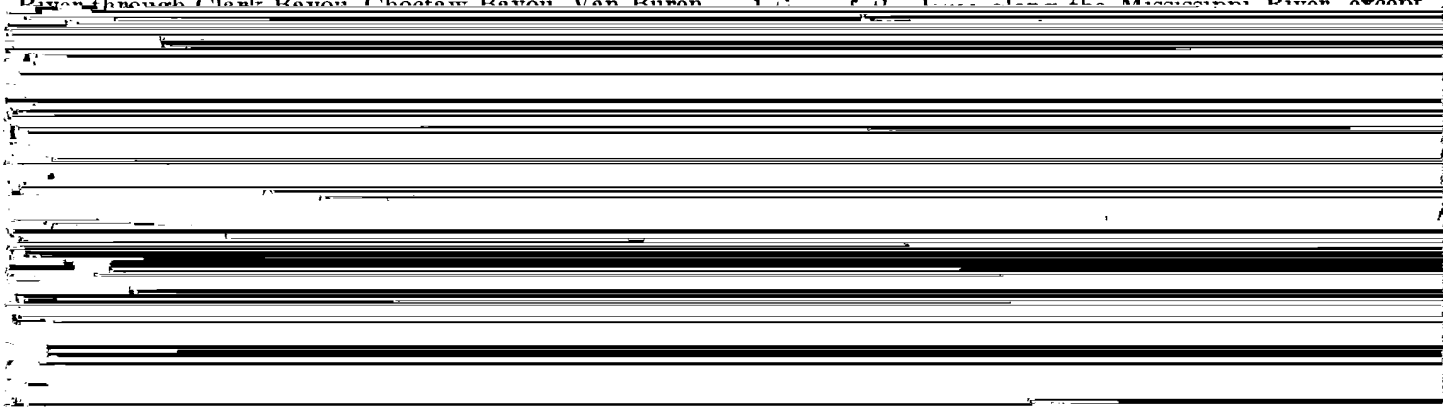
Much of the parish is on ridges and in swales. The relief is level to undulating. The parish slopes gently to the southwest from an elevation of 85 feet above sea level in the northeastern part to an elevation of about 50 feet in the southwestern corner. The low alluvial divides and meandering ridges are generally less than 5 feet above the level of the plain.

Drainage is away from the Mississippi River levee, in a southwesterly direction, and away from the Tensas River, in an easterly direction. Consequently, water accumulates in the center of the parish but is carried back to the Tensas River through Clark Bayou, Choctaw Bayou, Van Buren

edge of the parish. Most likely, the river acted then much as it does now, creating low, wide natural levees with gentle back slopes. It is also likely that flooding was prevalent at that time. Later, the Mississippi River probably assumed its present position. This movement accounts for the oxbow lakes, the swamps, and the sediments from floods that covered or decreased the size of old lakes. The result of these changes is a heterogeneous mixture of silt and sand over clay, and of clay over silt and sand.

The length of time the soils have been weathering is reflected in the history of the Mississippi River. Along the present channel of the river, the soils are alkaline and show very little profile development, but along the older abandoned channels, the soils are acid and show profile development. In places, subsequent beds of recent alluvium have covered older surfaces.

There has been no deposition by flooding since the com-



(4) FISK, H. N.
1944. GEOLOGICAL INVESTIGATIONS OF THE ALLUVIAL VALLEY OF THE LOWER MISSISSIPPI RIVER. Miss. River. Comm.
(5) KILMER, VICTOR J.
1960. THE ESTIMATION OF FREE IRON OXIDES IN SOILS. Soil Sci. Soc. Amer. Proc. 24: 5, pp. 420–421.
(6) ——— AND ALEXANDER, LYLE T.
1949. METHODS OF MAKING MECHANICAL ANALYSIS OF SOILS. Soil Sci. 68: 15–24.
(7) ——— AND MULLINS, J. F.
1954. IMPROVED STIRRING AND PIPETTING APPARATUS FOR MECHANICAL ANALYSIS OF SOILS. Soil Sci. 77: 437–441.
(8) MCFARLAN, E., JR.
1961. RADIOCARBON DATING OF LATE QUATERNARY DEPOSITS, SOUTH LOUISIANA. Geo. Soc. of Amer. Bul., v. 72, pp. 129–169.
(9) OLMSTEAD, L. B., ALEXANDER, LYLE T., AND MIDDLETON, H. E.
1930. A PIPETTE METHOD OF MECHANICAL ANALYSIS OF SOILS BASED ON IMPROVED DISPERSION PROCEDURE. USDA Tech. Bul. 170, 22 pp., illus.
(10) PATRICK, W. J. JR., HADDAN, C. B., AND HENDRIX, J. A.
1957. THE EFFECT OF LONGTIME USE OF WINTER COVER CROPS ON CERTAIN PHYSICAL PROPERTIES OF COMMERCE LOAM. Soil Sci. Soc. Amer. Proc. 21: 4, pp. 366–368.
(11) PEECH, MICHAEL, ALEXANDER, LYLE T., AND OTHERS.
1947. METHODS OF SOIL ANALYSIS FOR SOIL-FERTILITY INVESTIGATIONS. USDA Cir. 757, 25 pp.
(12) THORP, JAMES, AND SMITH, GUY D.
1949. HIGHER CATEGORIES OF SOIL CLASSIFICATION: ORDER, SUBORDER, AND GREAT SOIL GROUPS. Soil Sci. 67: 117–126.
(13) UNITED STATES DEPARTMENT OF AGRICULTURE.
1954. DIAGNOSIS AND IMPROVEMENT OF SALINE AND ALKALI SOILS. U.S. Dept. Agr. Handbook 60, 160 pp., illus.
(14) ———
1960. SOIL CLASSIFICATION, A COMPREHENSIVE SYSTEM, 7TH APPROXIMATION. 265 pp., illus. [Supplement issued in March 1967]
(15) ———
1960. MANAGEMENT AND INVENTORY OF SOUTHERN HARDWOODS. U.S. Dept. Agr., Forest Serv., Handbook 181, 102 pp.
(16) WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS.
1953. THE UNIFIED SOIL CLASSIFICATION SYSTEM. Tech. Memo. No. 3–357, v. 1.
(17) YOUNG, KEITH K.
1962. A METHOD OF MAKING MOISTURE DESORPTION MEASUREMENTS ON UNDISTURBED SOIL SAMPLES. Soil Sci. Soc. Amer. Proc. 26: 3, p. 301.

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 distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Erosion. The wearing away of the land surface by wind, running water, and other geological agents.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes.

O horizon. The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon. The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active, and it is therefore marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon. The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has (1) distinctive characteristics caused by accumulation of clay, sesquioxides, humus, or some combination of these; or (2) prismatic or blocky structure; or (3) redder or stronger colors; or (4) some combination of these characteristics. The combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

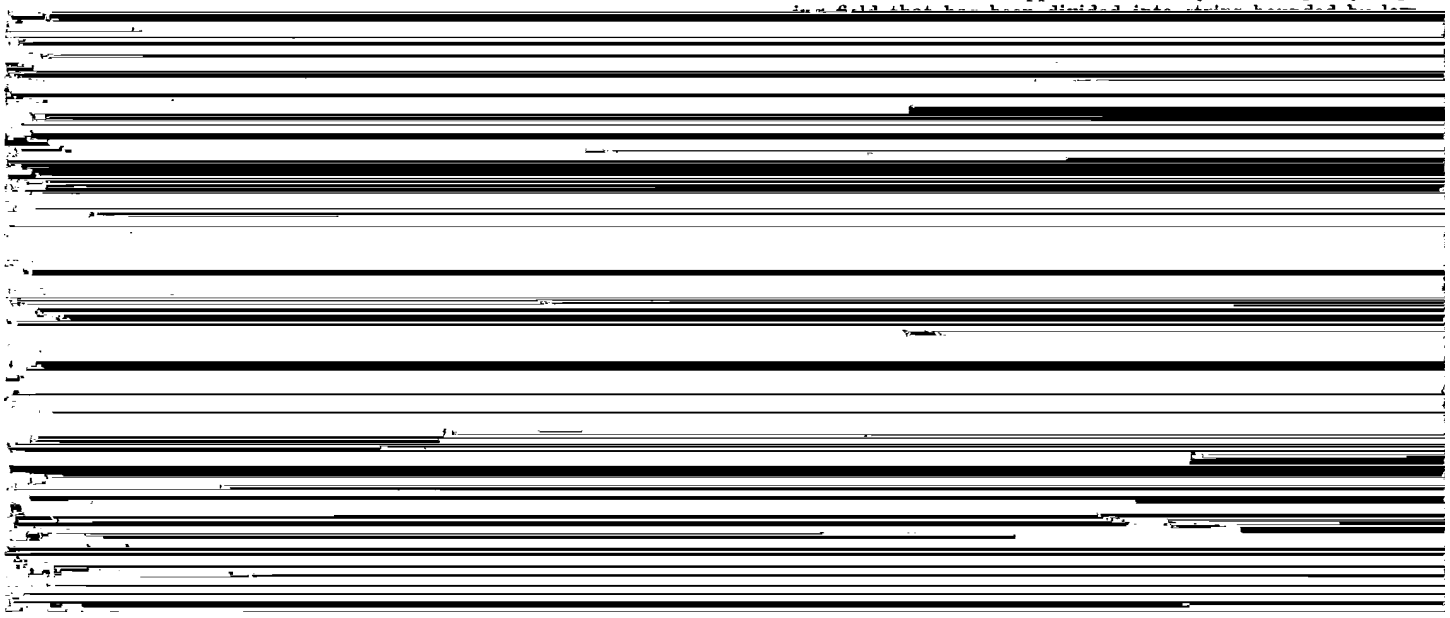
C horizon. The weathered rock material immediately beneath the solum. This layer, commonly called the soil parent material, is presumed to be like that from which the overlying horizons were formed in most soils. If the underlying material is known to be different from that in the solum, a Roman numeral precedes the letter, C.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Graded row.—Water is applied by running small streams in furrows between crop rows. The rows have a designated fall per 100 feet.

Contour levee.—Water is applied to a nearly level or gently slop-



layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods; podzolic soils commonly are mottled below a depth of 6 to 16 inches in the lower A horizon and in the B and C horizons.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Permeability. The ability of the soil to transmit air or water. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

pH value. A numerical means for designating acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value alkalinity; and a lower value, acidity. (See also Reaction, soil.)

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values or words as follows:

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

Sand. As a soil separate, individual rock or mineral fragments

joining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subbase. A selected soil material used under rigid or flexible pavement roads. It makes up the lower portion of the base course and is placed directly on the subgrade.

Subgrade (engineering). The substratum, consisting of in-place material or fill material, that is prepared for highway construction; does not include stabilized base course or actual paving material.

Subsoil. Technically, the B horizon; roughly, the part of the profile below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

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

Tilth, soil. The condition of the soil, especially of the soil structure,

[For a full description of a mapping unit, read both the description of the

[See table 1, p. 5, for approximate acreage and proportionate extent of the soils
the engineering properties of the soils, turn to the section beginning on p. 29.
descriptions of wildlife groups]

Map symbol	Mapping unit	Described on page	Capability unit Symbol	Capability unit Page
AcA	Alligator clay, 0 to 1 percent slopes	6	IIIw-2	25
AgB	Alligator clay, gently undulating	6	IIIw-5	26
AgD	Alligator clay, undulating	7	IIIw-5	26
BaA	Bruin silt loam, 0 to 1 percent slopes	7	I-1	23
BaB	Bruin silt loam, 1 to 3 percent slopes	8	IIe-1	23
BmB	Bruin-Mhoon complex, gently undulating	8	-----	--
	Bruin	--	IIw-3	24
	Mhoon	--	IIw-3	24
BrC	Bruin-Robinsonville-Crevasse complex, undulating	8	-----	--
	Bruin	--	IIe-2	23
	Robinsonville	--	IIe-2	23
	Crevasse	--	IIe-2	23
ChC	Clayey alluvial land and Sharkey clay, overflow, 0 to 5 percent slopes	8	Vw-2	27
CmA	Commerce silt loam, 0 to 1 percent slopes	9	I-1	23
CmB	Commerce silt loam, 1 to 3 percent slopes	10	IIe-1	23
CnA	Commerce silty clay loam, 0 to 1 percent slopes	10	IIw-1	24
CoB	Commerce silty clay loam, gently undulating	10	IIw-3	24
CrD	Crevasse fine sand, 0 to 8 percent slopes	10	IVs-1	26
CsD	Crevasse fine sand, overflow, 0 to 8 percent slopes	11	Vw-2	27
Dd	Dundee silt loam	11	I-2	23
De	Dundee silty clay loam	12	IIw-2	24
DgD	Dundee-Goldman-Tensas complex, undulating	12	-----	--
	Dundee	--	IIIw-6	26
	Goldman	--	IIIw-6	26
	Tensas	--	IIIw-6	26
DtB	Dundee-Tensas-Goldman complex, gently undulating	12	-----	--
	Dundee	--	IIIw-6	26
	Tensas	--	IIIw-6	26
	Goldman	--	IIIw-6	26
LrC	Loamy alluvial land and Robinsonville soils, overflow, 0 to 5 percent slopes	13	Vw-2	27
Mh	Mhoon silt loam	14	IIw-1	24

TO MAPPING UNITS

mapping unit and the description of the soils series to which the mapping unit belongs.

and table 2, p. 27, for estimated yields per acre of the principal crops. For facts about
See table 3, p. 30, for descriptions of woodland groups and table 7, p. 57, for

Map symbol	Mapping unit	Described on page	Capability unit	
			Symbol	Page
Mo	Mhoon silty clay loam	14	IIw-1	24
NcA	Newellton clay, 0 to 1 percent slopes	15	IIw-5	25
NcC	Newellton clay, 1 to 5 percent slopes	15	IIw-4	24
NeB	Newellton silty clay loam, 1 to 3 percent slopes	15	IIw-4	24
NtC	Newellton-Commerce-Tunica complex, undulating	16	-----	--
	Newellton	--	IIIw-4	26
	Commerce	--	IIIw-4	26
	Tunica	--	IIIw-4	26
NuB	Newellton-Mhoon silty clay loams, gently undulating	15	IIw-3	24
NyC	Newellton-Sharkey clays, undulating	16	IIIw-4	26
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]