United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Texas Agricultural Experiment Station

Soil Survey of Gonzales County, Texas

How To Use This Soil Survey

General Soil Map

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

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

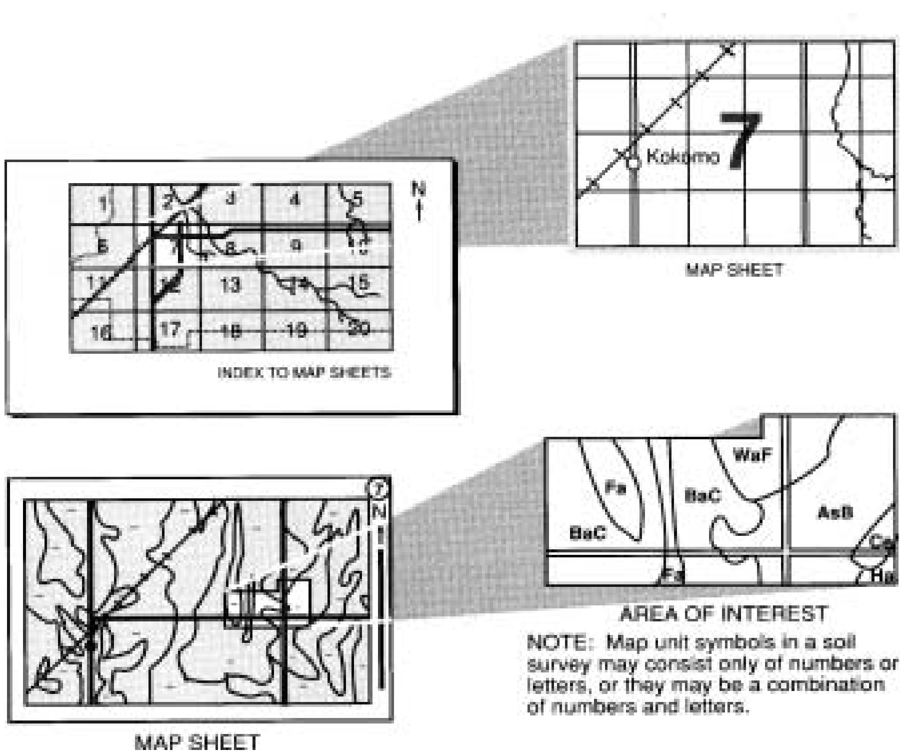
Detailed Soil Maps

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

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

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



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

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This survey was made cooperatively by the Natural Resources Conservation Service and the Texas Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Gonzales County Soil and Water Conservation District. The most current official data are available at **http://websoilsurvey.nrcs.usda.gov/app/**

Cover: Wildflowers and live oak trees in an area of Rosanky fine sandy loam, 1 to 3 percent slopes.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is http://www.nrcs.usda.gov

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Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

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

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Soil Survey of Gonzales County, Texas

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Fieldwork by
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United States Department of Agriculture, Natural Resources Conservation Service,
In cooperation with
Texas Agricultural Experiment Station

Gonzales County is in the southeastern part of Texas (fig. 1). The total area, which includes water area, is 684,365 acres or 1,070 square miles. The county is about 45 miles long and 28 miles wide. The elevation ranges from 580 feet above sea level in the northwest part of the county near the community of Belmont, to 200 feet above sea level in southeast Gonzales County where the Guadalupe River leaves the county. The topography is nearly level to rolling and generally slopes to the southeast. Gonzales County is drained by the San Marcos River, Peach Creek, and numerous other creeks which all flow into the Guadalupe River as it flows from west to southeast across the center of the county.

Most of the land in Gonzales County is devoted to the production of beef cattle in the form of rangeland or pasture and hayland. Seventy three percent of the county is used as rangeland while 20 percent of the land has been established to improved pasture and hayland. Five percent of the county is devoted to cropland. Feed corn, grain sorghum, small grains, and annual hay crops are the principle crops grown. Poultry production continues to expand in Gonzales County and provides large quantities of manure for fertilizing crop fields as well as pasture and hayland. Significant quantities of pecans are grown on bottomlands along the San Marcos and Guadalupe Rivers. Two percent of the county has been utilized as urban area for the cities of Gonzales, Nixon, Smiley, Harwood, Waelder, and other small settlements scattered throughout the county.

Gonzales County is in the Southern Claypan Area, Southern Blackland Prairie, and Northern Rio Grande Plains Major Land Resource Areas. The soils of the Southern Claypan Area are dominantly light colored loamy and sandy soils, which formed under native vegetation of post oak savannah and mid and tall grasses. The soils of the Southern Blackland Prairie and the Northern Rio Grande Plains are dominantly dark colored loamy and clayey soils which formed under mid and tall grasses.

General Nature of the Survey Area

This section provides general information about Gonzales County. It describes history, agriculture, natural resources, and climate.

History

Indians of the Comanche, Karankawa, Waco, Tonkawa, and Kechi tribes initially inhabited the Gonzales County area. In 1825, the town of Gonzales was established

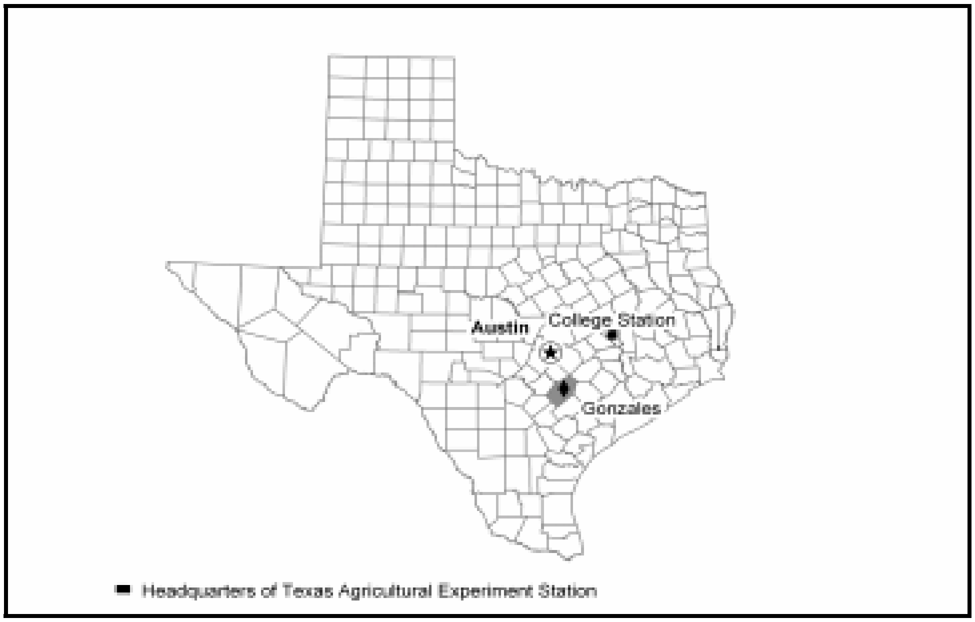

Figure 1.—Location of Gonzales County, Texas.

near the junction of the San Marcos and Guadalupe Rivers as the capitol of a land grant given to Green De Witt by Mexico to be populated by settlers from the United States. It was the western most Anglo settlement until after the Texas Revolution.

The Gonzales County area played a prominent role in the Texas Revolution. The first shots of the revolution were fired here on October 2, 1835. A Mexican force dispatched from San Antonio was routed while trying to confiscate a cannon, which the Mexican government had given to the colonists in 1831 for protection from Indian raids. Six months later the "Run Away Scrape" began in Gonzales as the gathering Texas forces received word of the fall of the Alamo and the approaching Mexican army. The town of Gonzales was burned and the Texans began a hasty retreat which ended on April 21, 1836 as the Texans defeated the Mexicans at the decisive Battle of San Jacinto.

Upon establishing independence the newly formed Texas Legislature divided the DeWitt Colony. This legislation created Gonzales County along with eight other counties on December 20, 1837.

Agriculture

Initially most of the inhabitants of Gonzales County lived on subsistence based farms. Many rural communities sprang up to serve as religious, educational, economic, and political centers for these inhabitants. Most of these settlements have vanished leaving only grave markers but some have grown into important communities today; Harwood and Waelder in the northeast corner; Gonzales at the confluence of the San Marcos and Guadalupe Rivers; Nixon and Smiley in the southwest corner.

As the agriculture of Gonzales County became more prosperous and grew from subsistence to a market based enterprise, these communities became important local markets for farm goods. The most important marketable farm products were cotton, corn, cattle, walnut lumber, and pecans.

Poultry meat and egg production became an important marketable farm product in the 1920's. Since this time Gonzales County has ranked near the top in the state for turkey, broiler, and egg production and continues to grow as a center for poultry production. The poultry industry has become a major source of on and off farm employment with support facilities such as a hatchery, feed mills, and chicken processing plants all located within the county.

Since the early days of settlement, the beef cattle industry has steadily grown in significance. Today, almost all the agricultural acreage in the county is devoted to the raising of beef cows. Most ranchers run cow-calf operations making Gonzales County one of the top cow-calf producers in the state of Texas. There are also several feed lots in the county.

Although cotton was once the major agricultural commodity produced, today there is practically none grown in the county. Much of the former cropland has been planted to permanent pasture such as coastal bermudagrass. The remaining cropland is primarily seeded to feed corn, annual winter forage or annual hay crops. Presently the only economically significant truck crop grown in the county is watermelon. Pecans are also an important agricultural commodity. Native and improved pecan tree orchards are grown on much of the bottomland along the San Marcos and Guadalupe Rivers.

Natural Resources

Soil is the most important natural resource in Gonzales County. The ability of the soil to produce grass and forage crops is vital to the livestock industry upon which the farm economy of Gonzales County depends.

Water of adequate quality for domestic and livestock use is available throughout the county. The San Marcos and Guadalupe Rivers bisect the county from northwest to southeast and converge in the center near the city of Gonzales. These rivers provide year round water for consumption and recreation. The Carrizo Sand geologic formation which underlies most of the county is a major Texas aquifer.

Oil and gas were discovered in Gonzales County in 1902 and have become valuable natural resources in the county. Significant deposits of sand and gravel occur within the county and are mined for road base and construction material. Several different types of clay have been economically mined within the county. During the first half of the 20th century there was a brick yard in the city of Gonzales where clay was mined and bricks were manufactured and today bentonite clay is mined to be used as a tank sealant.

Wildlife is an important natural resource in Gonzales County. Many ranchers are able to supplement their income by leasing out their land for deer hunting.

Climate

Prepared by the Natural Resources Conservation Service National Water and Climate Center, Portland, Oregon.

Climate tables are created from data collected at climate stations Gonzales and Nixon, Texas. Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order Station Victoria, Texas.

Table 1 provides data on temperature and precipitation for the survey area as recorded at Gonzales in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

Table 4 provides data on temperature and precipitation for the survey area as recorded at Nixon in the period 1971 to 2000. Table 5 shows probable dates of the first freeze in fall and the last freeze in spring. Table 6 provides data on the length of the growing season.

In winter, at Gonzales, the average temperature is 52.2 degrees F and the average daily minimum temperature is 40.7 degrees. At Nixon, the average temperature is 54.2 degrees F and the average daily minimum temperature is 42.8 degrees. The lowest temperature on record, which occurred at Nixon on January 31, 1949, is 3 degrees. In summer, the average temperature is 82.9 degrees at Gonzales and the average daily maximum temperature is 93.8 degrees. At Nixon the average temperature is 82.8 degrees and the average daily maximum temperature is 94.0 degrees. The highest temperature, which occurred at Nixon on July 26, 1954, is 113 degrees.

Growing degree days are shown in Table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation, at Gonzales, is about 36.02 inches. Of this, about 29.13 inches, or 81 percent, usually falls in March through November. The average annual total precipitation, at Nixon, is about 34.92 inches. Of this, about 30.73 inches, or 88 percent, usually falls in February through November. In both locations the growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 8.17 inches at Nixon on April 22, 1946. Thunderstorms occur on about 55.5 days each year, and most occur in August.

Snowfall in this portion of Texas is mostly an anomaly that may have severe consequences. As an example, the average seasonal snowfall is 0.0 inches, to establish an average seasonal snowfall a site must have an average that exceeds 0.1 inches. On occasion the area does have snowfall that can and does create severe problems. The greatest snow depth at any one time during the period of record was 7 inches recorded on January 13, 1985. The heaviest 1-day snowfall on record was 2.5 inches recorded on January 22, 1940.

The average relative humidity in midafternoon is about 66 percent. Humidity is higher at night, and the average at dawn is about 91 percent. The sun shines 80 percent of the time in summer and 44 percent in winter. The prevailing wind is from the north northwest. Average wind speed is highest, 10.7 miles per hour, in May.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Loamy and Clayey Soils on Uplands

These soils make up about 65 percent of the county. The major soils are in the Arol, Benchley, Burlewash, Bryde, Cadell, Carbengle, Crockett, Edge, Eloso, Flatonia, Frelsburg, Gillett, Greenvine, Griter, Luling, Monteola, Papalote, Rosanky, Rosenbrock, Schattel, Shiner, Singleton, and Weesatche series. They formed mainly in weakly cemented sandstone, loamy and clayey sediments, shale, clays, and marl. The landscape is nearly level to moderately steep and has a well defined drainage pattern.

The native range plants are mid and tall grasses in a post oak and live oak savannah. These soils are used mainly as rangeland or improved pasture. Some areas are used as cropland.

1. Edge-Rosanky

Very gently sloping to strongly sloping, very deep and deep, loamy soils that are well drained; on savannahs (fig. 2)

Setting

Landform: Uplands
Slope range: 1 to 12 percent

Composition

Extent of the general soil map unit: 22 percent of the survey area
Extent of the soils in the unit:
- Edge soils—46 percent
- Rosanky soils—28 percent
- Minor soils—26 percent

Soil Properties and Qualities

Edge
Depth class: Deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Loamy and clayey sediments
Surface textural class: Fine sandy loam
Slope: Very gently sloping to strongly

Rosanky
Depth class: Very deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Weakly cemented sandstone
Surface textural class: Fine sandy loam
Slope: Very gently sloping and gently sloping

Minor soils

- Axtell soils are on ridges and along side slopes of drainageways.
- Jedd soils are on convex low knolls and ridges and along side slopes of drainageways.
- Kurten soils are on gently sloping linear or convex nose slopes and side slopes.
- Silvern soils are on gently sloping backslopes.
- Zack soils are on very gently sloping low knolls and side slopes.
- Zulch soils are on very gently sloping footslopes.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

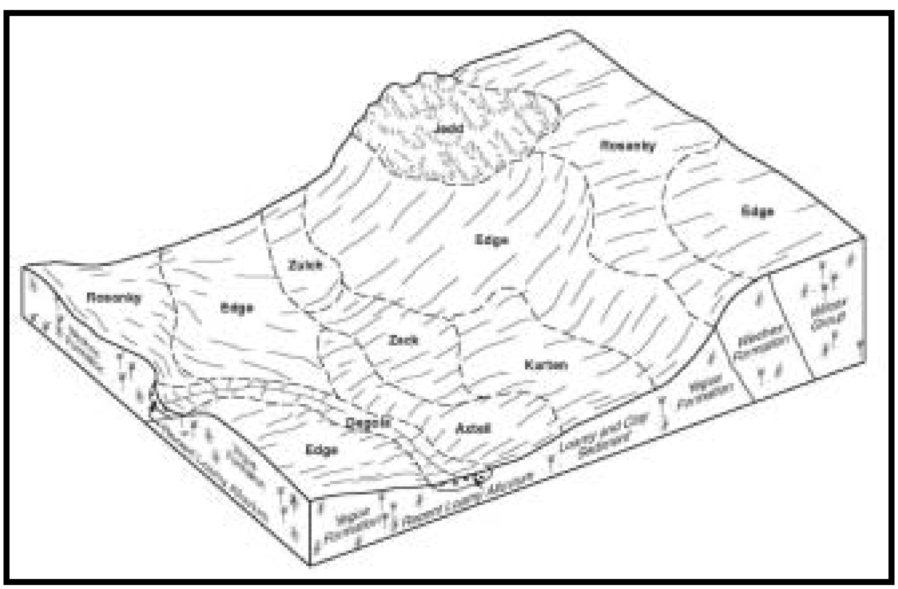

Figure 2.—Patterns of soils and underlying material in the Edge-Rosanky general soil map unit.

2. Luling-Crockett-Benchley

Very gently sloping and gently sloping, very deep, clayey and loamy soils that are well drained and moderately well drained; on prairies (fig. 3)

Setting

Landform: Uplands
Slope range: 1 to 5 percent

Composition

Extent of the general soil map unit: 19 percent of the survey area
Extent of the soils in the unit:
- Luling soils—26 percent
- Crockett soils—23 percent
- Benchley soils—14 percent
- Minor soils—37 percent

Soil Properties and Qualities

Luling
Depth class: Very deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Interbedded shale and clay
Surface textural class: Clay
Slope: Very gently sloping and gently sloping

Crockett
Depth class: Deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Shale and clay sediments
Surface textural class: Fine sandy loam
Slope: Very gently sloping and gently sloping

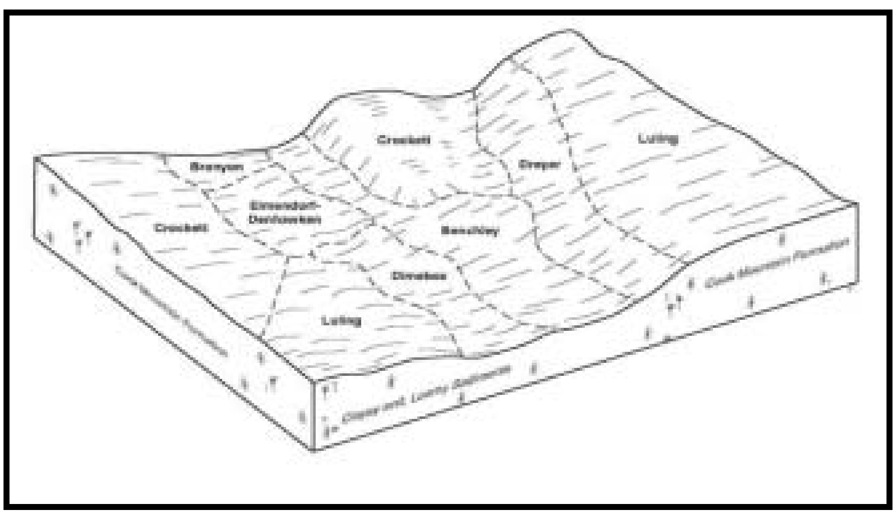

Figure 3.—Patterns of soils and underlying material in the Luling-Crockett-Benchley general soil map unit.

Benchley
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Shale from marine sediments
Surface textural class: Clay loam
Slope: Very gently sloping

Minor soils

- Branyon soils are on nearly level positions.
- Dimebox soils are on very gently sloping low plains and backslopes.
- Dreyer soils are on convex low knolls and ridges and along side slopes of drainageways.
- Elmendorf and Denhawken soils are on very gently sloping and gently sloping side slopes and linear plains.
- Normangee soils are on very gently sloping and gently sloping backslopes and linear positions.
- Sunev soils are on gently sloping to moderately steep side slopes and convex ridges.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

3. Arol-Singleton

Nearly level to gently sloping, moderately deep, loamy soils that are moderately well drained, on prairies

Setting

Landform: Uplands
Slope range: 0 to 5 percent

Composition

Extent of the general soil map unit: 6 percent of the survey area
Extent of the soils in the unit:
Singleton soils—44 percent
Arol soils—38 percent
Minor soils—18 percent

Soil Properties and Qualities

Singleton
Depth class: Moderately deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Weakly cemented sandstone
Surface textural class: Fine sandy loam
Slope: Nearly level to gently sloping

Arol
Depth class: Moderately deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Weakly cemented sandstone

Surface textural class: Fine sandy loam
Slope: Nearly level and very gently sloping

Minor soils

- Rutersville soils are on nearly level positions

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

4. Griter-Papalote

Nearly level to gently sloping, deep and very deep, loamy soils that are welldrained and moderately well drained, on savannahs

Setting

Landform: Uplands
Slope range: 0 to 5 percent

Composition

Extent of the general soil map unit: 4 percent of the survey area
Extent of the soils in the unit:
Griter soils—42 percent
Papalote soils—15 percent
Minor soils—43 percent

Soil Properties and Qualities

Griter
Depth class: Deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Loamy and clayey sediments
Surface textural class: Fine sandy loam
Slope: Very gently sloping and gently sloping

Papalote
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Loamy and clayey sediments
Surface textural class: Loamy fine sand
Slope: Nearly level and very gently sloping

Minor soils

- Bryde soils are on very gently sloping positions.
- Gillett soils are on gently sloping to moderately steep positions.
- Leming soils are on nearly level and very gently sloping positions.
- Nusil soils are on nearly level to gently sloping positions.
- Rhymes soils are on nearly level to gently sloping positions.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing

5. Flatonia-Greenville

Very gently sloping and gently sloping, deep and moderately deep, loamy and clayey soils that are welldrained and moderately well drained, on prairies

Setting

Landform: Uplands
Slope range: 1 to 5 percent

Composition

Extent of the general soil map unit: 4 percent of the survey area
Extent of the soils in the unit:
  Flatonia soils—48 percent
  Greenvine soils—45 percent
  Minor soils—7 percent

Soil Properties and Qualities

Flatonia
Depth class: Deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Weakly cemented sandstone
Surface textural class: Sandy clay loam
Slope: Very gently sloping

Greenvine
Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Weakly cemented sandstone
Surface textural class: Clay
Slope: Very gently sloping and gently sloping

Minor soils

- Cuero soils are on very gently sloping backslope positions

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

6. Burlewash-Cadell

Very gently sloping to strongly sloping, moderately deep and deep, loamy soils that are well drained and moderately well drained; on savannahs

Setting

Landform: Uplands
Slope range: 1 to 12 percent

Composition

Extent of the general soil map unit: 3 percent of the survey area
Extent of the soils in the unit:
  Burlewash soils—63 percent
  Cadell soils—18 percent
  Minor soils—19 percent

Soil Properties and Qualities

Burlewash
Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Weakly cemented sandstone
Surface textural class: Fine sandy loam
Slope: Very gently sloping to strongly sloping

Cadell
Depth class: Deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Loamy and shale materials
Surface textural class: Fine sandy loam
Slope: Very gently sloping

Minor soils

- Shiro soils are on gently sloping positions

Use and Management

Major uses: Rangeland
Management concerns: Depth of soils and available water capacity
Management measures: None

7. Carbengle-Shiner-Frelsburg

Very gently sloping to strongly sloping, moderately deep, very deep to shallow, loamy and clayey soils that are well drained and moderately well drained, on prairies (fig. 4)

Setting

Landform: Uplands
Slope range: 1 to 12 percent

Composition

Extent of the general soil map unit: 3 percent of the survey area
Extent of the soils in the unit:
Carbengle soils—54 percent
Shiner soils—24 percent
Frelsburg soils—21 percent
Minor soils—1 percent

Soil Properties and Qualities

Carbengle
Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Weakly cemented sandstone
Surface textural class: Loam
Slope: Very gently sloping to strongly sloping

Shiner
Depth class: Shallow
Drainage class: Well drained
Position on landform: Shoulder and summit
Parent material: Weakly cemented sandstone

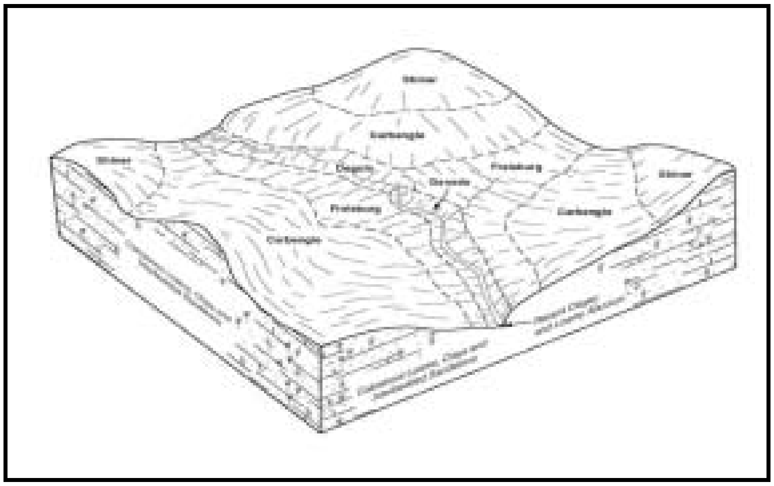

Figure 4.—Patterns of soils and underlying material in the Carbengle-Shiner-Frelsburg general soil map unit.

Surface textural class: Fine sandy loam
Slope: Very gently sloping to strongly sloping

Frelsburg
Depth class: Very deep
Drainage class: Moderately well
Position on landform: Footslopes and toeslopes
Parent material: Clays and marls
Surface textural class: Clay
Slope: Very gently sloping and gently sloping

Minor soils
- Coy soils are on very gently sloping positions.
- Degola soils are on nearly level flood plains.
- Ganado soils are on nearly level flood plains.

Use and Management

Major uses: Rangeland
Management concerns: Soil depth and low available water capacity
Management measures: Controlled grazing and rotation

8. Gillett-Bryde

Very gently sloping to moderately steep, moderately deep and deep, loamy soils that are well drained, on prairies (fig.5)

Setting

Landform: Uplands
Slope range: 1 to 20 percent

Composition

Extent of the general soil map unit: 2 percent of the survey area
Extent of the soils in the unit:
Gillett soils—55 percent
Bryde soils—38 percent
Minor soils—7 percent

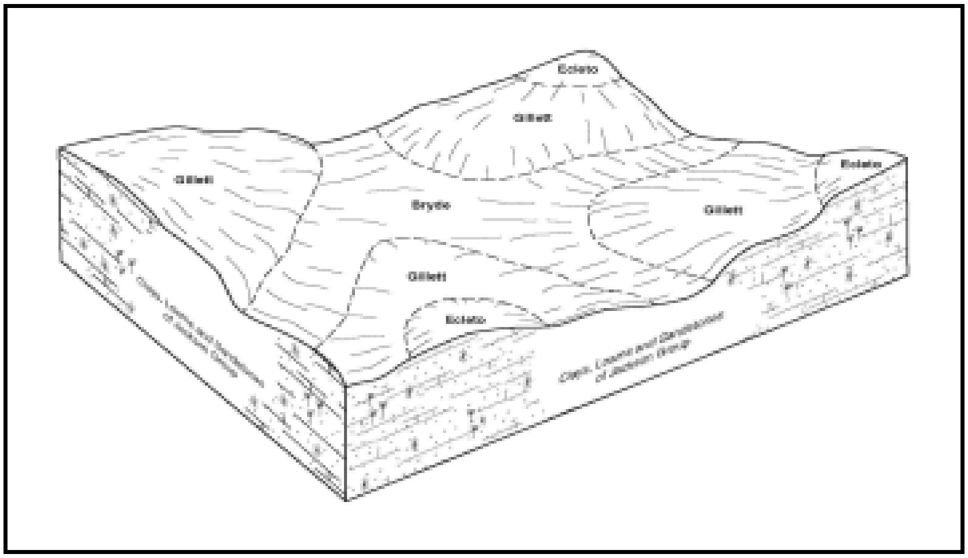

Figure 5.—Patterns of soils and underlying material in the Gillett-Bryde general soil map unit.

Soil Properties and Qualities

Gillett
Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Shoulder and summit
Parent material: Weakly cemented sandstone
Surface textural class: Fine sandy loam
Slope: Very gently sloping to moderately steep

Bryde
Depth class: Deep
Drainage class: Well drained
Position on landform: Backslopes and toeslopes
Parent material: Weakly cemented sandstone
Surface textural class: Fine sandy loam
Slope: Very gently sloping

Minor soils

- Ecleto soils are loamy and on very gently sloping to gently sloping positions.

Use and Management

Major uses: Rangeland
Management concerns: Soil depth and low available water capacity
Management measures: Controlled grazing and rotation

9. Schattel-Eloso-Rosenbrock

Very gently sloping and gently sloping, deep and moderately deep, loamy and clayey soils that are well drained, on prairies

Setting

Landform: Uplands
Slope range: 1 to 5 percent

Composition

Extent of the general soil map unit: 1 percent of the survey area
Extent of the soils in the unit:
Schattel soils—48 percent
Eloso soils—21 percent
Rosenbrock soils—14 percent
Minor soils—17 percent

Soil Properties and Qualities

Schattel
Depth class: Deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Clayey residuum
Surface textural class: Clay loam
Slope: Very gently sloping and gently sloping

Eloso
Depth class: Moderately deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Shale and clay sediments
Surface textural class: Clay
Slope: Very gently sloping

Rosenbrock
Depth class: Deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Sandstone
Surface textural class: Clay
Slope: Very gently sloping

Minor soils
- Pavelek soils are on very gently sloping positions.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

10. Weesatche-Monteola

Very gently sloping and gently sloping, very deep, loamy and clayey soils that are well drained and moderately well drained, on prairies

Setting

Landform: Uplands
Slope range: 1 to 5 percent

Composition

Extent of the general soil map unit: 1 percent of the survey area
Extent of the soils in the unit:
Weesatche soils—48 percent
Monteola soils—19 percent
Minor soils—33 percent

Soil Properties and Qualities

Weesatche
Depth class: Very deep
Drainage class: Well drained
Position on landform: Uplands
Parent material: Loamy sediments
Surface textural class: Fine sandy loam
Slope: Very gently sloping to gently sloping

Monteola
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Uplands
Parent material: Shale and clay sediments
Surface textural class: Clay
Slope: Very gently sloping to gently sloping

Minor soils

- Coy soils are loamy and on very gently sloping positions.
- Conquista soils are on very gently sloping to steep positions.
- Sarnosa soils are on moderately sloping positions.
- Tordia soils are clayey and on very gently sloping positions.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

Sandy and Loamy Soils on Uplands

These soils make up about 6 percent of the county. The major soils are in the Silstid and Padina series. They formed mainly in thick beds of loamy and sandy materials. The landscape is nearly level to gently sloping and has a well defined drainage pattern. The native range plants are mid and tall grasses mainly in a post oak and live oak savannah. These soils are used mainly as rangeland or improved pasture.

11. Silstid-Padina

Nearly level to gently sloping, very deep, loamy soils that are well drained, on prairies (fig. 6)

Setting

Landform: Uplands
Slope range: 0 to 5 percent

Composition

Extent of the general soil map unit: 6 percent of the survey area
Extent of the soils in the unit:
Silstid soils—48 percent
Padina soils—27 percent
Minor soils—25 percent

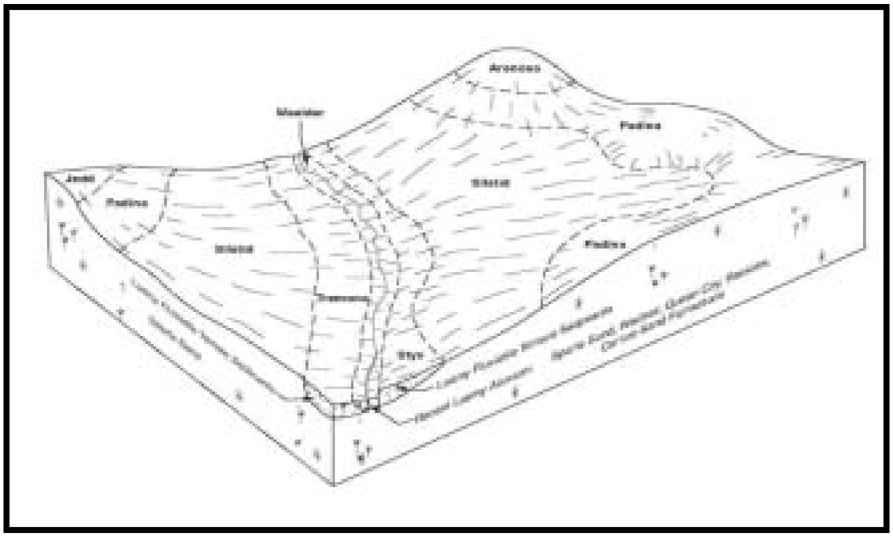

Figure 6.—Patterns of soils and underlying material in the Silstid-Padina general soil map unit.

Soil Properties and Qualities

Silstid
Depth class: Very deep
Drainage class: Well drained
Position on landform: Backslopes and linear plane
Parent material: Loamy and sandy materials
Surface textural class: Loamy fine sand
Slope: Very gently sloping and gently sloping

Padina
Depth class: Very deep
Drainage class: Well drained
Position on landform: Shoulder and summits
Parent material: Sandy and loamy materials
Surface textural class: Loamy fine sand
Slope: Nearly level and gently sloping

Minor soils
- Alum soils are on nearly level and very gently sloping positions.
- Arenosa soils are on gently sloping summit positions.
- Styx soils are on nearly level and very gently sloping toeslope positions.
- Tremona soils are on gently sloping backslope positions.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

Loamy Soils on Terraces

These soils make up about 12 percent of the county. The major soils are in the Tabor, Chazos, and Wilson series. They formed mainly in loamy and clayey sediments. All of these soils are nearly level and very gently sloping. The native range plants are mid and tall grasses mainly in post oak and live oak savannah. These soils are used mainly as rangeland or improved pasture.

12. Tabor-Chazos-Wilson

Nearly level and very gently sloping, very deep, loamy soils that are moderately well drained; on prairies (fig. 7)

Setting

Landform: Uplands
Slope range: 0 to 3 percent

Composition

Extent of the general soil map unit: 12 percent of the survey area
Extent of the soils in the unit:
- Tabor soils—39 percent
- Chazos soils—27 percent
- Wilson soils—8 percent
- Minor soils—26 percent

Soil Properties and Qualities

Tabor
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Slightly higher positions
Parent material: Loamy and clayey sediments
Surface textural class: Fine sandy loam
Slope: Nearly level and very gently sloping

Chazos
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Flats and slightly concave positions
Parent material: Loamy and clayey sediments
Surface textural class: Loamy fine sand
Slope: Nearly level and very gently sloping

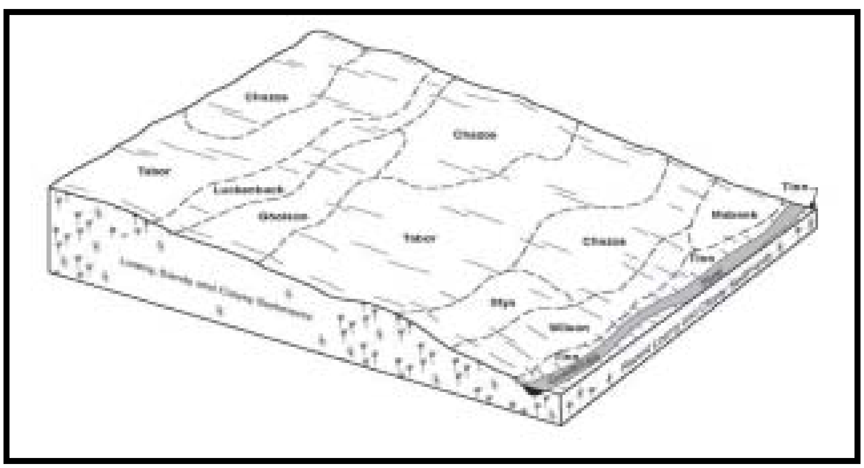

Figure 7.—Patterns of soils and underlying material in the Tabor-Chazos-Wilson general soil map unit.

Wilson
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Flats and slightly concave positions
Parent material: Loamy and clayey sediments
Surface textural class: Clay loam
Slope: Nearly level

Minor soils

- Gholson soils are on higher and backslopes of drainageways.
- Luckenbach soils are in similar positions.
- Mabank soils are on nearly level to concave positions.
- Styx soils are on slightly higher positions.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

Loamy and Clayey Soils on Flood Plains

These soils make up about 17 percent of the county. The major soils are the Buchel, Degola, Ganado, Meguin, Tinn, and Waelder series. They formed mainly in loamy and clayey alluvium. All these soils are nearly level. A meandering river or stream dominates each area. These soils are used mainly as rangeland, but a few areas are used as improved pasture or cropland. The native range plants are mid and tall grasses interspersed with live oak, pecan, and post oak trees.

13. Meguin-Buchel-Tinn

Nearly level, very deep, loamy and clayey soils that are well drained and moderately well drained; on prairies

Setting

Landform: Flood plain
Slope range: 0 to 1 percent

Composition

Extent of the general soil map unit: 10 percent of the survey area
Extent of the soils in the unit:
Meguin soils—54 percent
Buchel soils—20 percent
Tinn soils—9 percent
Minor soils—17 percent

Soil Properties and Qualities

Meguin
Depth class: Very deep
Drainage class: Well drained
Position on landform: Concave and flats
Parent material: Loamy alluvium
Surface textural class: Silty clay loam
Slope: Nearly level

Buchel
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Concave and flats
Parent material: Clayey calcareous alluvial sediments
Surface textural class: Clay
Slope: Nearly level

Tinn
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Concave and flats
Parent material: Clayey calcareous alluvial sediments
Surface textural class: Clay
Slope: Nearly level

Minor soils

- Bosque soils are on slightly higher positions.
- Degola soils are in similar positions.
- Waelder soils are in slightly higher positions.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

14. Degola-Waelder-Ganado

Nearly level, very deep, loamy and clayey soils that are well drained and moderately well drained

Setting

Landform: Flood plain
Slope range: 0 to 1 percent

Composition

Extent of the general soil map unit: 7 percent of the survey area
Extent of the soils in the unit:
Degola soils—61 percent
Waelder soils—21 percent
Ganado soils—13 percent
Minor soils—5 percent

Soil Properties and Qualities

Degola
Depth class: Very deep
Drainage class: Well drained
Position on landform: Flats and slightly concave positions
Parent material: Loamy alluvium
Surface textural class: Clay loam
Slope: Nearly level

Waelder
Depth class: Very deep
Drainage class: Well drained
Position on landform: Flats and slightly higher natural levees

Parent material: Loamy alluvial sediments
Surface textural class: Loam
Slope: Nearly level

Ganado
Depth class: Very deep
Drainage class: Moderately well drained
Position on landform: Flats and slightly concave positions
Parent material: Clayey alluvium sediments
Surface textural class: Clay
Slope: Nearly level

Minor soils

- Styx soils are on slightly higher knolls in toeslope positions.
- Tinn soils are in similar positions.

Use and Management

Major uses: Rangeland
Management concerns: Overgrazing
Management measures: Controlled grazing and rotation

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Edge gravelly fine sandy loam, 2 to 5 percent slopes, is a phase of the Edge series. Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Elmendorf-Denhawken complex, 1 to 3 percent slopes is an example. This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Gullied land is an example.

Table 7 lists the acreage and proportionate extent of each map unit. Other tables provide properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

AmB—Alum loamy fine sand, 0 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Nearly level and very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Blackjack oak and post oak; little bluestem, switchgrass, and yellow Indiangrass

Typical Profile

Surface layer:
0 to 24 inches—brown loamy fine sand

Subsurface layer:
24 to 30 inches—light brown loamy fine sand

Subsoil:
30 to 52 inches—red sandy clay
52 to 62 inches—red sandy clay loam

Underlying material:
62 to 80 inches—light reddish brown sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Non-saline
Shrink-swell potential: Moderate
Water erosion hazard: Moderate

Composition

Alum soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Chazos soils have sandy surface layers less than 20 inches thick and are in lower positions.
- The Jedd soils have gravelly fine sandy loam surfaces, a sandstone layer within 40 inches of the surface, and are on high ridges and backslope positions.
- The Rosanky soils have fine sandy loam surface layers and are on similar positions.
- The Tabor soils have dense clayey subsoil layers within 16 inches of the surface and are in lower positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland, rangeland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughtiness.
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughtiness.
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Alum soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The potential for sloughing severely restricts shallow excavations of this soil.

Minor limitations:
- The moderate shrink-swell potential in the subsoil restricts the use for dwellings with basements.
- The loamy fine sand surface layer greater than 24 inches thick restricts seedling emergence and survivability because of droughtiness.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer restricts this soil for this use and requires special consideration when used for recreational development.

Waste management

Major limitations:
- The slow permeability and medium runoff restrict the application of waste material.
- The surface texture restricts the use for treatment of wastewater by overland flow.

Minor limitations:
- The slow permeability and acid reaction restrict use for treatment of wastewater by slow rate.

Interpretive Groups

Land capability classification: 3e
Ecological site: Loamy Sand PE 31-44

ApC—Arenosa fine sand, 1 to 5 percent slopes

Setting

Landform: Uplands
Distinctive surface features: None
Landscape position: Summit and shoulder slopes
Slope: Very gently sloping and gently sloping with plain to convex surfaces
Shape of areas: Oblong
Size of areas: 30 to 200 acres
Native vegetation: Blackjack oak and post oak; little bluestem, greenbrier, annual weeds, and grasses

Typical Profile

Surface layer:
0 to 12 inches—very pale brown fine sand

Underlying material:
12 to 80 inches—very pale brown fine sand

Soil Properties

Depth: Very deep
Drainage class: Somewhat excessively drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Negligible
Permeability: Rapid
Available water capacity: Low
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: None
Water erosion hazard: Slight

Composition

Arenosa soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Padina soils have loamy subsoils within 60 inches of the surface and are in slightly lower positions.
- The Silstid soils have loamy subsoils within 40 inches of the surface and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- The fine sand surface layer greater than 20 inches thick severely restricts seedling emergence and survivability because of low fertility and droughtiness.
- The low available water capacity severely restricts plant growth and yields.

Cropland

Major limitations:
- The fine sand surface layer greater than 20 inches thick severely restricts seedling emergence and survivability because of low fertility and droughtiness.
- The low available water capacity severely restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity severely restricts plant growth.
- The fine sand layers restrict the survivability of grass and legumes because of low fertility and droughtiness.

Wildlife habitat

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity severely restricts plant growth.
- The fine sand layers restrict the survivability of grass and legumes because of low fertility and droughtiness.

Urban development

Major limitations:

- The potential for sloughing severely restricts shallow excavations.
- The fine sand layers restrict grasses and legumes survivability because of low fertility and droughtiness.

Recreation

Major limitations:

- The fine sand layers restrict the survivability of grass and legumes because of low fertility and droughtiness.

Minor limitations:

- The sandy surface layer requires special consideration in order to maintain a vegetative cover on these areas when used for recreational development.
- The gently sloping terrain requires special consideration when used for constructing playgrounds.

Waste management

Major limitations:

- The very rapid permeability severely restricts the application and treatment of waste materials because of the potential for groundwater contamination.

Minor limitations:

- The low water holding capacity and droughtiness hinders plant growth and restricts the application of waste material.
- The acid soil reaction restricts the use for waste materials application and treatment.

Interpretive Groups

Land capability classification: 4s
Ecological site: Very Deep Sand PE 48-68

ArA—Arol fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Uplands
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Nearly level with concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Post oak; little bluestem, big bluestem, Indiangrass, switchgrass, and sideoats grama

Typical Profile

Surface layer:
0 to 5 inches—grayish brown fine sandy loam

Subsoil:
5 to 16 inches—black clay
16 to 33 inches—dark grayish brown clay

Underlying material:
33 to 80 inches—brown weakly cemented sandstone

Soil Properties

Depth: Moderately deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Arol soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Greenvine soils are clayey throughout and are on slightly higher positions.
- The Shalba soils have sandstone bedrock within 20 inches of the surface and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration, plant growth, and yields.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.

Minor limitations:
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

- The moderately deep depth to bedrock restricts root penetration and crop growth.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity severely restricts plant growth.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts plant growth.

Urban development

Major limitations:
- The high shrink-swell potential in the subsoil horizons requires special consideration when used for urban development.
- The low strength requires special consideration when used for local roads and streets.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The moderately deep depth to bedrock restricts shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slow permeability can cause wet conditions that restrict the use of this soil for recreation.
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- When dry, the soil is droughty and forms a surface crust which restricts plant growth.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- The soil depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The surface texture restricts treatment of wastewater by overland flow.

Minor limitations:

- The low water holding capacity and droughtiness hinders plant growth and restricts the application of waste material.

Interpretive Groups

Land capability classification: 3s
Ecological site: Claypan Savannah PE 48-68

ArB—Arol fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes
Slope: Very gently sloping
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Post oak; little bluestem, big bluestem, Indiangrass, switchgrass, and sideoats grama

Typical Profile

Surface layer:
0 to 6 inches—grayish brown fine sandy loam

Subsoil:
6 to 20 inches—very dark gray clay
20 to 29 inches—dark gray clay
29 to 38 inches—light brownish gray clay

Underlying material:
38 to 80 inches—pale yellow weakly cemented siltstone

Soil Properties

Depth: Moderately deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Arol soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Flatonia soils have surface layers with more than 20 percent clay and are on similar positions.
- The Greenvine soils are clayey throughout and are on similar positions.

- The Shalba soils have sandstone within 20 inches of the surface and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The susceptibility of this soil to the effects of erosion requires special consideration during seedbed preparation.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts plant growth.
- The moderately deep depth to bedrock restricts root penetration and plant growth and yields.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts plant growth.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts plant growth and yields.

Urban development

Major limitations:
- The high shrink-swell potential in the subsoil horizons requires special consideration when used for urban development.

- The low strength requires special consideration when used for local roads and streets.

Minor limitations:
- The clayey subsoil restricts shallow excavations.
- The moderately deep depth to bedrock restricts shallow excavations, lawns, and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict the use of this soil for recreation.
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- When dry, the soil is droughty and forms a surface crust which restricts plant growth.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- The soil depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The surface texture restricts the use for treatment of wastewater by overland flow.

Minor limitations:
- The low water holding capacity and droughtiness hinders plant growth and restricts the application of waste material.

Interpretive Groups

Land capability classification: 3e
Ecological site: Claypan Savannah PE 48-68

AxB—Axtell gravelly fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Terrace
Distinctive surface features: Rounded gravel
Landscape position: Risers and treads
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 25 to 200 acres
Native vegetation: Post oak, blackjack oak, hickory, and red cedar; greenbrier, little bluestem, big bluestem, Indiangrass, panicum, and paspalum

Typical Profile

Surface layer:
0 to 7 inches—brown gravelly fine sandy loam

Subsurface layer:
7 to 10 inches—pale brown gravelly fine sandy loam

Subsoil:
10 to 20 inches—red clay
20 to 41 inches—brownish yellow clay
41 to 62 inches—grayish brown clay
62 to 80 inches—light gray clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Axtell soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Luckenbach soils have loamy surface layers and are in lower positions.
- The Silvern soils have very gravelly surface layers greater than 20 inches thick and are on higher positions.
- The Sunev soils have loamy surface layers, are on similar positions, and are calcareous throughout.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat and pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.

- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Wildlife habitat

The Axtell soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential in the subsoil horizons requires special consideration when used for urban development.
- The gravelly surface layer requires special consideration in order to maintain a vegetative cover.
- The low strength requires special consideration when used for local roads and streets.

Minor limitations:
- The clayey subsoil restricts shallow excavations.

Recreation

Major limitations:
- The gravelly surface layer requires special consideration when used for recreational development.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatments of waste materials.
- The surface texture restricts the use for treatment of wastewater by overland flow.

Interpretive Groups

Land capability classification: 3e
Ecological site: Claypan Savannah PE 48-68

AxC—Axtell gravelly fine sandy loam, 3 to 5 percent slopes

Setting

Landform: Terrace
Distinctive surface features: Rounded gravel
Landscape position: Risers and treads
Slope: Gently sloping with convex surfaces

Shape of areas: Irregular
Size of areas: 20 to 250 acres
Native vegetation: Post oak, blackjack oak, hickory, and red cedar; greenbrier, little bluestem, big bluestem, Indiangrass, panicum, and paspalum

Typical Profile

Surface layer:
0 to 9 inches—brown gravelly fine sandy loam

Subsoil:
9 to 23 inches—red clay
23 to 45 inches—light brownish gray clay
45 to 63 inches—pale brown clay
63 to 80 inches—very pale brown clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Axtell soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Luckenbach soils have loamy surface layers and are in lower positions.
- The Silvern soils have very gravelly surface layers greater than 20 inches thick and are on higher positions.
- The Sunev soils have loamy surface layers, are on similar positions, and are calcareous throughout.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat and pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Wildlife habitat

The Axtell soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential in the subsoil horizons requires special consideration when used for urban development.
- The gravelly surface layer requires special consideration in order to maintain a vegetative cover.
- The low strength requires special consideration when used for local roads and streets.

Minor limitations:

- The clayey subsoil restricts shallow excavations.

Recreation

Major limitations:

- The gravelly surface layer requires special consideration when used for recreational development.

Minor limitations:

- The gently sloping terrain requires special consideration when used for constructing playgrounds.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application and treatment of waste material.
- The surface texture restricts the use for treatment of wastewater by overland flow.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

AxE—Axtell gravelly fine sandy loam, 5 to 12 percent slopes

Setting

Landform: Terrace
Distinctive surface features: Rounded gravel
Landscape position: Risers and treads
Slope: Moderately sloping and strongly sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 25 to 300 acres
Native vegetation: Post oak, blackjack oak, hickory, and red cedar; greenbrier, little bluestem, big bluestem, Indiangrass, panicum, and paspalum

Typical Profile

Surface layer:
0 to 8 inches—grayish brown gravelly fine sandy loam

Subsurface layer:
8 to 11 inches—pale brown gravelly fine sandy loam

Subsoil:
11 to 25 inches—light reddish brown clay
25 to 43 inches—light red clay
43 to 66 inches—light reddish brown clay
66 to 80 inches—very pale brown clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Axtell soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Edge soils decrease in clay content in the lower subsoil and are on similar positions.
- The Silvern soils have very gravelly surface layers greater than 20 inches thick and are on higher positions.
- The Sunev soils are calcareous throughout and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Wildlife habitat

The Axtell soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential in the subsoil horizon requires special consideration when used for urban development.
- The gravelly surface layer requires special consideration in order to maintain a vegetative cover.
- The low strength requires special consideration when used for local roads and streets.

Minor limitations:

- The clayey subsoil restricts shallow excavations.
- The slope restricts shallow excavations and small commercial buildings.

Recreation

Major limitations:

- The strongly sloping terrain is a severe restriction to the construction of a playground on this soil.
- The gravelly surface layer with small stones requires special consideration when used for recreational development.

Waste management

Major limitations:

- The very slow permeability, slope, and surface texture restrict the application and treatment of waste materials.

Minor limitations:

- The hazard of very high surface runoff on strongly sloping terrain requires special consideration when applying waste materials.

Interpretive Groups

Land capability classification: 6e
Ecological site: Claypan Savannah PE 48-68

BnB—Benchley clay loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with plane to convex surfaces
Shape of areas: Irregular
Size of areas: 200 to 500 acres
Native vegetation: Little bluestem, big bluestem, Indiangrass, brownseed paspalum, and various forbs

Typical Profile

Surface layer:
0 to 6 inches—dark brown clay loam

Subsoil:
6 to 14 inches—dark brown clay loam
14 to 19 inches—strong brown clay
19 to 49 inches—dark yellowish brown and yellowish brown clay
49 to 80 inches—yellowish brown and strong brown clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: High

Root zone: Very deep
Salinity: None
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Benchley soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Crockett soils have fine sandy loam surface layers and are on similar positions.
- The Dimebox and Luling soils are clayey throughout and are on similar positions.
- The Dreyer soils are calcareous and clayey throughout and are on higher positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland and rangeland

Management Concerns

Pasture

The Benchley soil is not limited for pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Benchley soil is not limited for rangeland.

Wildlife habitat

The Benchley soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential in the subsoil horizon requires special consideration when used for urban development.
- The low strength requires special consideration when used for local roads and streets.

Minor limitations:
- The clayey subsoil restricts shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope restricts the use for playgrounds.

Waste management

Major limitations:
- The slow permeability and surface texture restrict use for the application and treatment of waste materials.

Minor limitations:
- The acid soil reaction restricts the use for treatment of wastewater by slow rate.

Interpretive Groups

Land capability classification: 2e
Ecological site: Clay Loam PE 44-64

BoA—Bosque clay loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flat plain
Slope: Nearly level plain
Shape of areas: Linear parallel to river
Size of areas: 50 to 800 acres
Native vegetation: Pecan, elm, and live oak; Indiangrass, little bluestem, big bluestem, and switchgrass

Typical Profile

Surface layer:
0 to 11 inches—dark gray clay loam

Subsurface layer:
11 to 28 inches—dark grayish brown loam

Subsoil:
28 to 54 inches—grayish brown loam
54 to 80 inches—grayish brown clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: Frequent for brief duration from October to May
Runoff: Negligible
Permeability: Moderate
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Bosque soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Gholson soils have thick sandy surface layers and are on sandy mounds.
- The Tinn soils are clayey throughout and are on similar positions.
- The Waelder soils have sandy subsoils and are on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland, rangeland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.
- The hazard of frequent flooding requires special consideration when used for grazing areas.

Cropland

Major limitations:
- The hazard of frequent flooding severely restricts the use for cropland.
- Frequent flooding severely restricts seedbed preparation, crop growth, and can result in crop loss.

Rangeland

The Bosque soil is not limited for rangeland.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- Frequent flooding restricts the use for openland and wetland wildlife habitat.

Urban development

Major limitations:
- Frequent flooding severely restricts this soil for urban uses.

Recreation

Major limitations:
- The hazard of frequent flooding severely restricts the use for campgrounds, playgrounds, and golf fairways.

Minor limitations:
- The hazard of frequent flooding requires special consideration when used for picnic areas, paths, and trails.

Waste management

Major limitations:
- Frequent flooding severely restricts the application and treatment of waste materials.
- The moderate permeability restricts the use for wastewater by overland flow and rapid infiltration.

Interpretive Groups

Land capability classification: 5w
Ecological site: Loamy Bottomland

BpA—Bosque-Tinn complex, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: Undulating
Landscape position: Bosque—mounds; Tinn—depressions
Slope: Nearly level
Shape of areas: Linear along San Marcos River channel
Size of areas: 15 to 500 acres
Native vegetation: Elm, hackberry, live oak, pecan, and cottonwood; big bluestem, little bluestem, Indiangrass, switchgrass, and sideoats grama

Typical Profile

Bosque

Surface layer:
0 to 16 inches—very dark gray clay loam

Subsurface layer:
16 to 38 inches—very dark gray clay loam

Subsoil:
38 to 68 inches—brown clay loam
68 to 80 inches—dark brown clay

Tinn

Surface layer:
0 to 17 inches—very dark gray clay

Subsoil:
17 to 23 inches—very dark gray clay
23 to 51 inches—very dark gray clay
51 to 80 inches—dark gray clay

Soil Properties

Depth: Very deep
Drainage class: Bosque—well drained; Tinn—moderately well drained
Water table: None within a depth of 6 feet
Flooding: Frequent for brief duration; Bosque—October to May; Tinn—February to August
Runoff: Negligible
Permeability: Bosque—moderate; Tinn—very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Bosque—low; Tinn—very high
Water erosion hazard: Slight

Composition

Bosque soil and similar inclusions: 50 to 55 percent
Tinn soil and similar inclusions: 35 to 45 percent
Contrasting inclusions: 0 to 15 percent

Contrasting Inclusions

- The Degola soils are loamy throughout, noncalcareous, and on similar positions.
- The Navasota soils are clayey throughout, noncalcareous, and in concave positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.
- The hazard of frequent flooding requires special consideration when used for grazing areas.

Minor limitations:
- The clayey surface layer in the Tinn soil restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- The hazard of frequent flooding severely restricts the use for cropland.
- Frequent flooding severely restricts seedbed preparation, crop growth, and can result in crop loss.

Minor limitations:
- The clayey surface layer in the Tinn soil restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability in the Tinn soil can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

The Bosque and Tinn soils are not limited for rangeland.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- Frequent flooding during the growing season restricts planting and growth of plants used as food and cover for wildlife habitat.

Urban development

Major limitations:
- Frequent flooding severely restricts the use for urban development.

- The Tinn soil has very high shrink-swell potential in the surface horizon which severely restricts the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The hazard of frequent flooding severely restricts the use for playgrounds and camp areas.

Minor limitations:

- The hazard of frequent flooding requires special consideration when used for picnic areas, paths, and trails.

Waste management

Major limitations:

- Frequent flooding severely restricts this soil for the application and treatment of waste materials.
- The Bosque surface texture and moderate permeability restricts the use for treatment of wastewater by overland flow and rapid infiltration.
- The very slow permeability of the Tinn soil may promote wet conditions and hinder the application of waste material.

Interpretive Groups

Land capability classification: Bosque soil—5w; Tinn soil—5w
Ecological site: Bosque soil—Loamy Bottomland PE 44-64; Tinn soil—Clayey Bottomland PE 44-64

BrA—Branyon clay, 0 to 1 percent slopes

Setting

Landform: Terrace
Distinctive surface features: Gilgai
Landscape position: Riser and tread
Slope: Nearly level with plane surfaces
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Elm and hackberry; little bluestem, big bluestem, Indiangrass, switchgrass, and sideoats grama

Typical Profile

Surface layer:
0 to 5 inches—dark gray clay

Subsoil:
5 to 36 inches—very dark gray clay
36 to 74 inches—dark gray and gray clay
74 to 80 inches—light brownish gray clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High

Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Slight

Composition

Branyon soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Mabank soils have loamy surface layers and are on higher landscape positions.
- The Meguin soils are loamy throughout, are on lower landscape positions, and occasionally flooded.
- The Wilson soils have loamy surface layers and are on slightly higher landscape positions.

Land Uses

Major land use: Cropland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

The Branyon soil is not limited for rangeland.

Wildlife habitat

The Branyon soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- This very high shrink-swell potential in the surface horizon severely restricts the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

- The low strength requires special consideration when used for local roads and streets development.
- The clayey surface requires special consideration when used for lawns and landscaping.

Recreation

Major limitations:
- The high clay content requires special consideration when used for golf fairways.

Minor Limitations:
- The very slow permeability promotes wet conditions and restricts the use for campgrounds, playgrounds, and picnic areas.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application of waste material.

Minor limitations:
- The slope restricts the use for treatment of wastewater by overland flow.

Interpretive Groups

Land capability classification: 2w
Ecological site: Blackland PE 44-64

BtB—Bryde fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Spiny hackberry, mesquite, post oak, and live oak; Texas wintergrass, sideoats grama, curlymesquite, buffalograss, bristlegrass, Hall panicum, and red grama; agarito and lotebush

Typical Profile

Surface layer:
0 to 8 inches—grayish brown fine sandy loam

Subsoil:
8 to 26 inches—very dark gray clay
26 to 36 inches—dark grayish brown clay
36 to 44 inches—grayish brown sandy clay
44 to 55 inches—yellowish brown sandy clay

Underlying material:
55 to 80 inches—light gray weakly cemented sandstone

Soil Properties

Depth: Deep
Drainage class: Well drained

Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Bryde soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Denhawken soils are calcareous throughout and are on similar to higher positions.
- The Elmendorf soils have darker surface layers and are on similar to higher positions.
- The Gillett soils are moderately deep and are on higher positions
- The Tordia soils are clayey throughout and on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plants growth and yields.
- The dense clayey subsoil limits root penetration which restricts plants growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

The Bryde soil is not limited for rangeland.

Wildlife habitat

The Bryde soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The very high shrink-swell potential in the subsoil requires special consideration when used for urban development.
- The low strength requires special consideration when used for local roads and streets.

Minor limitations:

- The clayey subsoil restricts the use for shallow excavations.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very gently sloping terrain requires consideration when used for playgrounds.

Waste management

Major limitations:

- The slow permeability and surface texture restricts the use for the application and treatment of waste materials.

Minor limitations:

- The sodium in the subsoil restricts the use for treatment of wastewater by slow rate.

Interpretive Groups

Land capability classification: 3e
Ecological site: Tight Sandy Loam PE 31-44

BuA—Buchel clay, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plain
Distinctive surface features: Alternating areas of high and lows
Landscape position: Flat plain
Slope: Nearly level with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Pecan, elm, and hackberry; little bluestem, big bluestem, paspalum, and panicum

Typical Profile

Surface layer:
0 to 17 inches—very dark gray clay

Subsoil:
17 to 40 inches—dark gray clay
40 to 63 inches—grayish brown clay
63 to 80 inches—light brownish gray clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: Occasional for very brief duration from January to December
Runoff: High
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: Very high
Water erosion hazard: Slight

Composition

Buchel soil and similar inclusions: 90 to 95 percent
Contrasting inclusions: 5 to 10 percent

Contrasting Inclusions

- The Ganado soils are noncalcareous and on similar positions.
- The Meguin soils are loamy throughout and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Cropland and pasture

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The occasional flooding during the growing season restricts seedbed preparation.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- Occasional flooding during the growing season restricts seedbed preparation and growth of most crops.

Rangeland

The Buchel soil is not limited for rangeland.

Wildlife habitat

The Buchel soil is not limited for openland wildlife habitat.

Urban development

Major limitations:

- Occasional flooding severely restricts the use for urban development.
- The very high shrink-swell potential severely restricts the use for urban development.
- The potential for sloughing severely restricts shallow excavations.
- The low strength restricts the use for local roads and streets.
- The clay content may promote wet conditions which restricts the use for lawns and landscaping

Recreation

Major limitations:

- The hazard of occasional flooding severely restricts the use for camp areas.
- The clayey content restricts the use for golf fairways.

Minor limitations:

- The hazard of occasional flooding requires special consideration when used for playgrounds.
- The very slow permeability can cause wet conditions which restricts the use for picnic and playgrounds areas.
- The clay content severely restricts the use for picnic areas, playgrounds, paths, trails, and golf fairways.

Waste management

Major limitations:

- Occasional flooding severely restricts the application and treatment of waste materials.
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3w
Ecological site: Clayey Bottomland PE 19-44

BvA—Buchel clay, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: Alternating areas of highs and lows.
Landscape position: Flats and depressions
Slope: Nearly level with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Pecan, elm, and hackberry; little bluestem, big bluestem, paspalum, and panicum

Typical Profile

Surface layer:
0 to 12 inches—black clay

Subsoil:
12 to 25 inches—black clay
25 to 48 inches—very dark grayish brown clay

48 to 65 inches—grayish brown clay
65 to 80 inches—light yellowish brown clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: Frequent for brief duration from January to December
Runoff: High
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: Very high
Water erosion hazard: Slight

Composition

Buchel soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Meguin soils are loamy throughout and are on similar positions.
- Soils that are clayey and grayer in the subsoil on lower concave positions

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat and pasture

Management Concerns

Pasture

Major limitations:
- Frequent flooding severely restricts seedbed preparation, planting, and growth.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

The Buchel soil is not limited for rangeland.

Wildlife habitat

Major limitations:

- Frequent flooding during the growing season restricts planting and growth of plants used as food and cover for wildlife habitat.

Urban development

Major limitations:

- Frequent flooding severely restricts this soil for urban uses.
- This high shrink-swell potential severely restricts the use for urban development.
- The potential for sloughing severely restricts shallow excavations.
- The low strength restricts the use for local roads and streets.
- The clayey content may promote wet conditions which restricts the use for lawns and landscaping

Recreation

Major limitations:

- The hazard of frequent flooding severely restricts the use for camp areas, playgrounds, and golf fairways
- The soil clay content may promote wet conditions which restricts the use for golf fairways.

Minor limitations:

- The hazard of frequent flooding requires special consideration when used for picnic areas, paths, and trails.
- The very slow permeability restricts the use for picnic areas.
- The clayey content restricts the use for picnic areas, paths, trails, and golf fairways.

Waste management

Major limitations:

- Frequent flooding severely restricts this soil for the application of waste material.

Minor limitations:

- The very slow permeability promotes wet conditions and hinders the application of waste material.

Interpretive Groups

Land capability classification: 5w
Ecological site: Clayey Bottomland PE 19-44

BwB—Burlewash fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 30 to 100 acres
Native vegetation: Post oak, blackjack oak, cedar, and yaupon; mid and tall grasses

Typical Profile

Surface layer:
0 to 5 inches—brown fine sandy loam

Subsoil:
5 to 23 inches—reddish brown clay
23 to 28 inches—grayish brown clay loam

Underlying material:
28 to 80 inches—yellowish brown weakly cemented sandstone

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Burlewash soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Arol soils are moderately well drained and in lower positions.
- The Shalba soils have sandstone bedrock within 20 inches of the surface and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.

Minor limitations:

- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity restricts plant growth.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

Wildlife habitat

The Burlewash soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- This high shrink-swell potential severely restricts the use for dwellings with and without basements, small commercial buildings, local roads and streets.
- The low strength restricts the use for local roads and streets.

Minor limitations:

- The clayey content restricts the use for shallow excavations.
- The depth to rock and droughtiness restricts the use for shallow excavations, lawns, and landscaping.

Recreation

Major limitations:

- The susceptibility of this soil to the effects of erosion requires special consideration when used for paths and trails.

Minor limitations:

- The very slow permeability, depth to bedrock, slope and droughtiness restrict use for camp areas, picnic areas, playgrounds, and golf fairways.

Waste management

Major limitations:

- The very slow permeability, acid soil reaction, depth to bedrock, and surface texture restrict use for the application and treatment of waste materials.
- The low water holding capacity and droughtiness hinders plant growth and restricts the application of waste material.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

BwC2—Burlewash fine sandy loam, 3 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: Eroded areas
Landscape position: Shoulder slopes and backslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 150 acres
Native vegetation: Post oak, blackjack oak, cedar, and yaupon; mid and tall grasses

Typical Profile

Surface layer:
0 to 4 inches—pale brown fine sandy loam

Subsoil:
4 to 25 inches—red sandy clay
25 to 29 inches—light reddish brown sandy clay loam

Underlying material:
29 to 80 inches—very pale brown weakly cemented sandstone

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Burlewash soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Arol soils are moderately well drained and in lower positions.
- The Shalba soils have sandstone bedrock within 20 inches of the surface and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:

- The moderately deep depth to bedrock restricts root penetration and plants growth.
- The dense clayey subsoil limits root penetration which restricts plants growth and yields.
- Because of the severe erosion of the original topsoil special consideration is required to maintain productivity when used as pasture.

Cropland

Major limitations:

- The low available water capacity severely restricts crop growth and yields.
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.

Minor limitations:

- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.
- Because of the severe erosion of the original topsoil special consideration is required to maintain productivity when used for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity severely restricts plant growth.
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- Because of the erosion of a significant portion of the original topsoil special grazing management is required to maintain productivity when used as rangeland.

Wildlife habitat

The Burlewash soil is not limited for its use as openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential severely restricts the use for dwellings with and without basements, small commercial buildings, and local roads and streets.
- The low strength restricts the use for local roads and streets.

Minor limitations:

- The clayey content restricts the use for shallow excavations.
- The depth to rock and droughtiness restricts the use for shallow excavations, lawns, and landscaping.

Recreation

Major limitations:

- The susceptibility of this soil to the effects of erosion requires special consideration when used for paths and trails.

Minor limitations:

- The very slow permeability, depth to bedrock, slopes and droughtiness restricts the use for camp areas, picnic areas, playgrounds, and golf fairways.

Waste management

Major limitations:

- The very slow permeability and surface texture restrict the application and treatment of waste materials.
- The low water holding capacity and droughtiness hinders plant growth and restricts the application of waste material.
- The soil depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

BwE—Burlewash gravelly fine sandy loam, 5 to 12 percent slopes

Setting

Landform: Upland
Distinctive surface features: Rounded gravel
Landscape position: Shoulder and backslopes
Slope: Moderately sloping and strongly sloping with convex to concave surfaces
Shape of areas: Irregular
Size of areas: 50 to 100 acres
Native vegetation: Post oak, blackjack oak, cedar, and yaupon; mid and tall grasses

Typical Profile

Surface layer:
0 to 3 inches—brown gravelly fine sandy loam

Subsoil:
3 to 16 inches—yellowish red clay
16 to 28 inches—brown sandy clay loam

Underlying material:
28 to 80 inches—very pale brown weakly cemented sandstone

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Low

Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Burlewash soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Arol soils are moderately well drained and in lower positions.
- The Shalba soils have sandstone bedrock within 20 inches of the surface and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The susceptibility of this soil to the effects of severe erosion requires special consideration when used for pasture.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- Because of the erosion of the original topsoil special consideration is required to maintain productivity when used as pasture.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.
- Because of the erosion of the original topsoil special consideration is required to maintain productivity when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity severely restricts plant growth.
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- Because of the erosion of a significant portion of the original topsoil special grazing management is required to maintain productivity when used as rangeland.

Wildlife habitat

The Burlewash soil is not limited for its use as openland and rangeland wildlife habitat.

Urban development

Major limitations:
- This high shrink-swell potential severely restricts the use for dwellings with and without basements, small commercial buildings, local roads and streets.
- The low strength restricts the use for local roads and streets.
- The soil gravelly surface with small stones restricts the use for lawns and landscaping.

Minor limitations:
- The clay content restricts the use for shallow excavations.
- The depth to rock and slope restricts the use for shallow excavations.

Recreation

Major limitations:
- The strongly sloping terrain and small stones on the surface restricts the use for camp areas, picnic areas, playgrounds, and golf fairways.

Waste management

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderately deep depth to bedrock requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The very slow permeability, acid soil reaction, slope, and surface texture restricts the use for the application and treatment of waste materials.
- The moderately deep depth to bedrock restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 6e
Ecological site: Claypan Savannah PE 48-68

CaB—Cadell fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with plane to convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 150 acres
Native vegetation: Post oak, elm, ash, and hackberry; mid and tall grasses

Typical Profile

Surface layer:
0 to 5 inches—brown fine sandy loam

Subsoil:
5 to 28 inches—light brownish gray clay loam
28 to 47 inches—pale yellow clay
47 to 55 inches—light gray clay

Underlying material:
55 to 80 inches—light gray interbedded shale that has clay texture

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: A perched water table occurs at a depth of 1.5 feet to 3.5 feet from October to May
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Cadell soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Burlewash soils are moderately deep and on similar and slightly higher positions.
- The Denhawken soils have clayey surface layers and are on lower flatter positions
- The Elmendorf soils have loamy surface layers and are on lower flatter positions.
- The Singleton soils are moderately deep and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The slight salinity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plants growth and yields.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The water table from 1.5 to 3 feet during the growing season restricts root respiration and crop growth.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The slight salinity restricts germination, survivability, and crop growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, this soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

The Cadell soil is not limited for rangeland.

Wildlife habitat

The Cadell soil is not limited to openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential in the subsoil horizons requires special consideration when used for urban development.

Minor limitations:

- The seasonal high water table from 1.5 to 3 feet may promote wet conditions and restrict the use of this soil for urban development.

Recreation

The Cadell soil is not limited for recreational development.

Waste management

Major limitations:

- The seasonal high water table within 2 feet of the surface promotes wet conditions which severely restrict the application and treatment of waste materials.
- The slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Claypan Prairie PE 44-64

CbB—Carbengle loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 150 acres
Native vegetation: Mesquite and huisache; little bluestem, big bluestem, Indiangrass, and sideoats grama

Typical Profile

Surface layer:
0 to 8 inches—very dark gray loam

Subsoil:
8 to 13 inches—very dark gray clay loam
13 to 27 inches—grayish brown clay loam
27 to 35 inches—light brownish gray loam

Underlying material:
35 to 40 inches—white weakly cemented sandstone with a loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very low
Permeability: Moderate
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Moderate

Composition

Carbengle soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Cuero soils have darker surface layers greater than 20 inches thick and are in lower positions.
- The Frelsburg soils are clayey throughout and are on similar positions
- The Shiner soils have sandstone within 20 inches of the surface and are on higher positions.The Flatonia soils lack carbonates near the surface.

Land Uses

Major land use: Rangeland
Other land uses: Cropland and pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

This soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderately deep depth to bedrock and low strength restrict use for shallow excavations, dwellings with basements, local roads and streets, lawns, and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope and depth restricts the use for playgrounds and golf fairways.

Waste management

Major limitations:

- The moderately deep depth requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The moderately deep depth restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.
- The moderate water holding capacity and droughtiness hinders plant growth and restricts the application of waste materials.

Interpretive Groups

Land capability classification: 2e
Ecological site: Clay Loam PE 44-64

CbC—Carbengle loam, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 100 acres
Native vegetation: Mesquite and huisache; little bluestem, big bluestem, Indiangrass, and sideoats grama

Typical Profile

Surface layer:
0 to 13 inches—dark gray loam

Subsoil:
13 to 27 inches—light grayish brown loam
27 to 38 inches—very pale brown silty clay loam

Underlying material:
38 to 80 inches—very pale brown weakly cemented sandstone with a silty clay loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very low
Permeability: Moderate
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Severe

Composition

Carbengle soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Cuero soils have darker surface layers greater than 20 inches thick and are in lower positions.
- The Frelsburg soils are clayey throughout and are on similar positions
- The Shiner soils have sandstone within 20 inches of the surface and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Cropland, pasture, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The severe erosion hazard restricts crop growth and yields.
- The moderate available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.

Wildlife habitat

This soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- There are no major limitations.

Minor limitations:
- The soil depth and low strength restrict use for shallow excavations, dwellings with basements, local roads and streets, and lawns and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope and depth restrict use for playgrounds and golf fairways.

Waste management

Major limitations:
- The moderately deep depth requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The moderately deep depth restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 3e
Ecological site: Clay Loam PE 44-64

CbC2—Carbengle loam, 3 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: Eroded surfaces
Landscape position: Backslopes and footslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 200 acres
Native vegetation: Mesquite and huisache; little bluestem, big bluestem, Indiangrass, and sideoats grama

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown loam

Subsoil:
8 to 24 inches—brown clay loam

Underlying material:
24 to 80 inches—brown weakly cemented sandstone with a loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very low
Permeability: Moderate

Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Severe

Composition

Carbengle soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Cuero soils have darker surface layers greater than 20 inches thick and are in lower positions.
- The Frelsburg soils are clayey throughout and are on similar positions
- The Shiner soils have sandstone within 20 inches of the surface and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Cropland and pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts plant growth and yields.
- The moderately deep depth to bedrock restricts root penetration and plants growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.

Cropland

Major limitations:
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The moderately deep depth restricts root penetration and crop growth.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts root penetration and plant growth.

Wildlife habitat

This soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderately deep depth and low strength restrict use for shallow excavations, dwellings with basements, local roads and streets, and lawns and landscaping.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The slope and depth restrict use for playgrounds and golf fairways.

Waste management

Major limitations:

- The moderately deep depth requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The moderately deep depth restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 4e
Ecological site: Clay Loam PE 44-64

CbE—Carbengle loam, 5 to 12 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Shoulder slopes and backslopes with gullies traversing slopes from top to bottom
Slope: Moderately sloping and strongly sloping with concave surfaces
Shape of areas: Irregular
Size of areas: 35 to 100 acres
Native vegetation: Mesquite and huisache; little bluestem, big bluestem, Indiangrass, and sideoats grama

Typical Profile

Surface layer:
0 to 7 inches—very dark grayish brown loam

Subsoil:
7 to 28 inches—light yellowish brown clay loam

Underlying material:
28 to 80 inches—very pale brown weakly cemented sandstone with silty clay loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Severe

Composition

Carbengle soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Shalba soils are shallow to bedrock and are on similar positions.
- The Shiner soils are shallow to bedrock and are on similar positions.
- V-shaped Gullied lands are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.
- In gullied areas, more than 75 percent of the original topsoil has been eroded severely restricting seedling emergence and survivability because of low fertility and droughtiness.

Minor limitations:
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.
- The hazard of erosion on slopes from 8 to 12 percent requires special consideration when used for pasture.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.
- In gullied areas, more than 75 percent of the original topsoil has been eroded severely restricting seedling emergence and survivability because of low fertility and droughtiness.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity severely restricts plant growth.

Wildlife habitat

The soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The slope restricts the use for small commercial buildings.
- In gullied areas, a cemented pan within 20 inches severely restricts the use for shallow excavations and dwellings with basements.

Minor limitations:

- The strongly sloping terrain, depth, and low strength restrict the use of this soil for urban development.

Recreation

Major limitation:

- The strongly sloping terrain is a severely restricts the construction of a playground on this soil.

Minor limitations:

- The strongly sloping terrain and depth to bedrock require special consideration when constructing picnic areas, camp areas, and golf fairways.

Waste management

Major limitations:

- The low water holding capacity and droughtiness hinders plant growth and restricts the application of waste material.
- The moderately deep depth to bedrock requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The moderately deep depth to bedrock restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 6e
Ecological site: Clay Loam PE 44-64

ChA—Chazos loamy fine sand, 0 to 1 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Riser and tread
Slope: Nearly level with plane surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres

Native vegetation: Post oak and blackjack oak; little bluestem, purpletop tridens, beaked panicum, brownseed paspalum, Indiangrass, and low panicums

Typical Profile

Surface layer:
0 to 7 inches—pale brown loamy fine sand

Subsurface layer:
7 to 11 inches—very pale brown loamy fine sand

Subsoil:
11 to 22 inches—light yellowish brown clay
22 to 38 inches—pale brown sandy clay
38 to 51 inches—pale brown sandy clay loam
51 to 66 inches—light gray clay loam
66 to 80 inches—pale yellow clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Chazos soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Mabank soils have darker gray subsoils and are in lower positions.
- The Tabor soils have loamy surfaces and are on similar positions.
- The Wilson soils have darker gray subsoils and are in lower positions.
- Soils similar to Chazos soils in small depressions that remain wet for longer periods.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

The Chazos soil is not limited for rangeland.

Wildlife habitat

The Chazos soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The clay content, shrink-swell potential, and droughtiness require special consideration when used for urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slow permeability, small stones, and droughtiness restrict use for camp areas, playgrounds, and golf fairways.

Waste management

Major limitations:
- The slow permeability may promote wet conditions and restricts the application and treatment of waste materials.
- The surface texture restricts the use for treatment of wastewater by overland flow.

Minor limitations:
- The slow permeability and acid soil reaction restrict use for treatment of wastewater by slow rate.

Interpretive Groups

Land capability classification: 2w
Ecological site: Sandy Loam PE 48-68

ChB—Chazos loamy fine sand, 1 to 3 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Riser and tread
Slope: Very gently sloping with plane to concave surfaces
Shape of areas: Irregular

Size of areas: 15 to 300 acres
Native vegetation: Post oak and blackjack oak; little bluestem, purpletop tridens, beaked panicum, brownseed paspalum, Indiangrass, and low panicums

Typical Profile

Surface layer:
0 to 13 inches—dark brown loamy fine sand

Subsurface layer:
13 to 19 inches—brown loamy fine sand

Subsoil:
19 to 35 inches—grayish brown clay
35 to 44 inches—light brownish gray clay
44 to 50 inches—light gray clay loam
50 to 80 inches—light gray sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Chazos soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Styx soils have loamy subsoils and are on similar to slightly lower terrace positions.
- The Tabor soils have loamy surface layers and are on similar terrace positions.
- The Wilson soils have loamy surface layers and are on higher terrace positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

The Chazos soil is not limited for rangeland.

Wildlife habitat

The Chazos soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The clay content, moderate shrink-swell potential, and droughtiness require special consideration when used for urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope, small stones, and droughtiness restrict use for playgrounds and golf fairways.

Waste management

Major limitations:
- The slow permeability may promote wet conditions and restricts the application and treatment of waste materials.
- The surface texture restricts the use for treatment of wastewater by overland flow.

Minor limitations:
- The slow permeability and acid soil reaction restrict use for treatment of wastewater by slow rate.

Interpretive Groups

Land capability classification: 2e
Ecological site: Sandy Loam PE 48-68

CnB—Conquista clay, 1 to 3 percent slopes

Setting

Landform: Uplands
Distinctive surface features: Uranium mine reclaimed soil material
Landscape position: Backslopes and footslopes
Slope: Very gently sloping
Shape of areas: Areas are linear

Size of areas: 10 to 40 acres
Native vegetation: Bermudagrass, kleingrass, or bluestem

Typical Profile

Surface layer:
0 to 10 inches—very dark gray clay

Subsurface layer:
10 to 19 inches—dark grayish brown sandy clay loam

Underlying material:
19 to 80 inches—pale yellow sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Conquista soil and similar inclusions: 90 to 100 percent
Contrasting inclusions: 0 to 10 percent

Contrasting Inclusions

- These include undisturbed areas of Eloso, Monteola, Pavelek, and Rosenbrock soils that are in lower positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland, rangeland, wildlife habitat, and urban development

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The convex slope and high erosion hazard restrict use for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability restricts the use for rangeland.

Wildlife habitat

Major limitations:
- The very slow permeability restricts the growth of plants used for food and cover for openland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential restricts the use for urban development.

Recreation

Major limitations:
- The clayey surface layer restricts the use for golf fairways.

Minor limitations:
- The very slow permeability, clay content, and slope restrict the use for camp areas, picnic areas, playgrounds, paths and trails.

Waste management

Major limitations:
- The very slow permeability severely restricts the use for land application of manure, food processing, municipal sludge, and the disposal of wastewater.

Interpretive Groups

Land capability classification: 4e
Ecological site: No Ecological Site has been assigned.

CnG—Conquista clay, 20 to 40 percent slopes

Setting

Landform: Uplands
Distinctive surface features: Reclaimed uranium mine soil materials.
Landscape position: Summit, shoulder slopes and backslopes
Slope: Steep
Shape of areas: Areas are conical within the mine pit and linear on the spoil areas.
Size of areas: 10 to 25 acres
Native vegetation: Coastal bermudagrass or kleingrass

Typical Profile

Surface layer:
0 to 11 inches—dark gray clay

Underlying material:
11 to 80 inches—pale yellow loam

Soil Properties

Depth: Very deep
Drainage class: Well drained

Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Conquista soil and similar inclusions: 90 to 100 percent
Contrasting inclusions: 0 to 10 percent

Contrasting Inclusions

- These include undisturbed areas of Eloso, Monteola, Pavelek, and Rosenbrock soils in lower positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland, rangeland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- Steep slopes severely restrict the use of machinery for seedbed preparation and promote erosion.

Minor limitations:
- The very slow permeability and slight salinity restrict the use of grasses used for pasture.

Cropland

Major limitations:
- The severe hazard of soil erosion severely restricts the use for cropland.
- Steep slopes severely restrict the use of machinery for seedbed preparation and promote erosion.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and slight salinity restricts the use for rangeland.

Wildlife habitat

Major limitations:
- The low available water capacity severely restricts plant growth.
- The severe hazard of water erosion and steep slopes severely restrict the use of machinery for seedbed preparation.
- The high susceptibility to water erosion severely restricts plant growth and yields.

Urban development

Major limitations:
- The high shrink-swell potential severely restricts the use for urban uses.
- Slopes greater than 15 percent severely restrict the use of this soil for urban uses.

Recreation

Major limitations:
- Slopes greater than 15 percent restrict the use of this soil for picnic areas and camp areas.
- Slopes greater than 25 percent severely restrict the use of this soil for paths and trails.
- Slopes greater than 6 percent severely restrict the use of this soil for playgrounds.
- The clayey surface layer restricts the use for golf fairways.

Waste management

Major limitations:
- Slopes greater than 15 percent severely restrict the use of this soil for waste management practices.
- The very slow permeability severely restricts the use for land application of manure, food processing, municipal sludge, and the disposal of wastewater by irrigation.

Interpretive Groups

Land capability classification: 7e
Ecological site: No Ecological Site has been assigned.

CoA—Cost loamy fine sand, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Low stream terrace
Distinctive surface features: Barren white salty areas
Landscape position: Riser and tread
Slope: Nearly level with plane to concave surfaces
Shape of areas: Linear along drainage ways
Size of areas: 50 to 200 acres
Native vegetation: Mesquite; salt flat grass, gulf cordgrass, salt lavender, and alkali sacaton; bushy sea-oxeye, and cactus (fig. 8)

Typical Profile

Surface layer:
0 to 3 inches—pale yellow loamy fine sand

Subsoil:
3 to 9 inches—gray clay loam
9 to 17 inches—light brownish gray clay loam
17 to 30 inches—light brownish gray clay
30 to 48 inches—light gray fine sand
48 to 60 inches—light brownish gray loam
60 to 80 inches—greenish gray fine sand

Figure 8.—An area of Cost loamy fine sand, 0 to 1 percent, occasionally flooded. Salt flat grass is in the lower positions with gulf cordgrass in higher positions.

Soil Properties

Depth: Very deep
Drainage class: Somewhat poorly drained
Water table: A perched water table occurs at a depth 1 foot to greater than 6 feet from December to May
Flooding: Occasional flooding by stream overflow for brief duration from December to May
Runoff: High
Permeability: Very slow
Available water capacity: Very low
Root zone: Very deep
Salinity: Strong
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Cost soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Degola soils have loamy surface layers and are on similar positions.
- The Imogene soils have lower salinity levels and are on slightly higher positions.
- The Meguin soils have loamy surface layers and are on similar positions

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat

Management Concerns

Pasture

Major limitations:

- The very low available water capacity severely restricts plant growth and yields.
- The moderate to strong salinity severely restricts germination, survivability, and plants growth.
- The strongly sodic conditions severely restrict germination and plants growth.

Cropland

Major limitations:

- The very low available water capacity severely restricts crop growth and yields.
- The moderate to strong salinity severely restricts germination, survivability, and crop growth.
- The strongly sodic conditions severely restrict germination and crop growth.

Minor limitations:

- The water table during the growing season restricts root respiration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- This soil is somewhat poorly drained which causes it to stay saturated under extreme moisture conditions thus restricting seedbed preparation, planting, and growth.

Rangeland

Major limitations:

- The strong salinity severely restricts germination, survivability, and plant growth.
- The strongly sodic conditions severely restrict germination and plant growth.
- The very low available water capacity severely restricts plant growth.

Wildlife habitat

Major limitations:

- The strong salinity severely restricts germination, survivability, and plant growth for food and cover for wildlife habitat.
- The strongly sodic conditions severely restrict germination and plant growth.
- The very low available water capacity severely restricts plant growth.

Urban development

Major limitations:

- The seasonal high water table above 2.5 feet severely restricts the construction of dwellings with a basement.
- The hazard of flooding, shrink-swell potential, low strength, and sodic conditions restrict use for urban development.

Recreation

Major limitations:

- The seasonal water table near the surface may become unstable under heavy foot traffic thus restricting these areas for recreational uses.
- The strongly sodic conditions limit plant growth severely restricting these areas for recreational uses.
- The strongly saline conditions limit plant growth severely restricting these areas for recreational uses.
- The hazard of flooding restricts the use for camp areas.
- The very slow permeability restricts the use for recreation.

Waste management

Major limitations:

- This soil contains excessive sodium levels which hinder plant growth, severely restricting the application of waste material.
- This soil contains excessive salt levels which hinder plant growth, severely restricting the application of waste material.
- This soil has a very low water holding capacity which subjects it to droughtiness and severely restricts the use for the application of waste material.
- The very slow permeability may promote wet conditions and hinder the application of waste material.
- The seasonal high water table between 2 and 4 feet of the surface may promote wet conditions and hinder the application of waste material.
- The sandy or loamy subsoil restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 6s
Ecological site: Salty Prairie PE 25-44

CpB—Coy clay loam, 1 to 3 percent slopes

Setting

Landform: Uplands
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Texas cupgrass, wintergrass, buffalograss, sideoats grama, and other annual grasses

Typical Profile

Surface layer:
0 to 7 inches—dark gray clay loam

Subsoil:
7 to 29 inches—dark gray clay
29 to 44 inches—grayish brown clay
44 to 80 inches—brownish yellow clay

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Coy soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Monteola soils are clayey throughout and are on similar positions.
- The Schattel soils have higher color values in the surface layer and are on higher positions.
- The Tordia soils are clayey throughout and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

The Coy soil is not limited for pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Coy soil is not limited for rangeland.

Wildlife habitat

The Coy soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- This high shrink-swell potential and low strength severely restrict use for urban development.

Minor limitations:
- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability restricts the use for camp areas, picnic areas, and playgrounds.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Minor limitations:
- The surface texture restricts the use for treatment of wastewater by overland flow.

Interpretive Groups

Land capability classification: 2e
Ecological site: Rolling Blackland PE 31-44

CrB—Crockett fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Elm, hackberry, and mesquite; little bluestem, big bluestem, Indiangrass, switchgrass, and gramas

Typical Profile

Surface layer:
0 to 7 inches—brown fine sandy loam

Subsoil:
7 to 21 inches—yellowish red clay
21 to 35 inches—light yellowish brown clay
35 to 47 inches—light olive brown clay
47 to 59 inches—brownish yellow clay loam

Underlying material:
59 to 72 inches—pale yellow interbedded shale that has clay loam texture
72 to 80 inches—light gray clay

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None

Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Very slight
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Crockett soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Kurten soils are more acid in reaction and are on similar positions.
- The Normangee soils have clay loam surface layers and are on similar positions.
- The Luling soils are clayey throughout and are on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Crockett soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clay texture in the subsoil and droughty condition requires special consideration when used for shallow excavations and lawns and landscaping.

Recreation

Major limitations:

- The potential hazard of erosion restricts the use for paths and trails.

Minor limitations:

- The very slow permeability and droughty condition restricts the use for specific recreational development.

Waste Management

Major limitations:

- The very slow permeability and surface texture may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Claypan Prairie PE 44-64

CrC2—Crockett fine sandy loam, 2 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: Eroded surfaces
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Elm, hackberry, and mesquite; little bluestem, big bluestem, Indiangrass, switchgrass, and gramas

Typical Profile

Surface layer:
0 to 3 inches—brown fine sandy loam

Subsoil:
3 to 14 inches—dark yellowish brown clay
14 to 36 inches—yellowish brown clay
35 to 58 inches—light olive brown clay

Underlying material:
58 to 80 inches—olive yellow clay loam

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet

Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Crockett soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Kurten soils are more acid in reaction and are on similar positions.
- The Luling soils are clayey throughout and are on similar positions.
- The Normangee soils have clay loam surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil restricts root penetration which limits growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.
- Because of the erosion of 25 to 75 percent of the original topsoil, special consideration is required to maintain productivity when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:

- The moderate available water capacity and special grazing management are required to maintain productivity when used as rangeland.

Wildlife habitat

The Crockett soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture in the subsoil and droughty condition restricts the use for specific urban development.

Recreation

Major limitations:

- The moderate erosion hazard requires special consideration when constructing playgrounds.

Minor limitations:

- The very slow permeability and droughty condition restricts the use for specific recreational development.

Waste management

Major limitations:

- The very slow permeability and surface texture of this soil may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Prairie PE 44-64

CsB—Crockett gravelly fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Elm, hackberry, and mesquite; little bluestem, big bluestem, Indiangrass, switchgrass, and gramas

Typical Profile

Surface layer:
0 to 6 inches—brown gravelly fine sandy loam

Subsoil:
6 to 23 inches—reddish brown clay
23 to 45 inches—yellowish brown clay
45 to 56 inches—light olive brown clay

Underlying material:
56 to 80 inches—light brownish gray clay

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Crockett soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Kurten soils are more acid in the upper subsoil and occupy similar landscape positions.
- The Luling soils are clayey throughout and are on similar positions.
- The Normangee soils have sandy clay loam surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:
- The clayey texture, small stones on the surface, and droughtiness restrict use for specific urban development.

Recreation

Major limitations:
- The small stones on the soil surface restrict use for playgrounds.

Minor limitations:
- The very slow permeability and droughty condition restricts the use for specific recreational development.

Waste management

Major limitations:
- The very slow permeability and surface texture may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Claypan Prairie PE 44-64

CsC2—Crockett gravelly fine sandy loam, 2 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 25 to 100 acres
Native vegetation: Elm, hackberry, and mesquite; little bluestem, big bluestem, Indiangrass, switchgrass, and gramas

Typical Profile

Surface layer:
0 to 3 inches—brown gravelly fine sandy loam

Subsoil:
3 to 22 inches—reddish brown clay
22 to 43 inches—light olive brown clay
43 to 57 inches—light olive brown clay
Underlying material:
57 to 80 inches—light brownish gray clay

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Crockett soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Kurten soils are more acid in the upper subsoil and on similar positions.
- The Luling soils are clayey throughout and on similar positions.
- The Normangee soils have sandy clay loam surface layers and on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.
- Because of the erosion of 25 to 75 percent of the original topsoil special consideration is required to maintain productivity when used as pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The hazard of erosion on slopes from 3 to 5 percent requires special consideration when used for cropland.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.
- Because of the erosion of 25 to 75 percent of the original topsoil special consideration is required to maintain productivity when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:
- The clayey texture, small stones on the surface, and droughty condition restricts the use for specific urban development.

Recreation

Major limitations:
- The small stones on the soil surface restrict the use for playgrounds.

Minor limitations:
- The very slow permeability and droughty condition restricts the use for specific recreational development.

Waste management

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and surface texture of this soil may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Prairie PE 44-64

CuB—Cuero fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with plane to concave surfaces
Shape of areas: Oblong
Size of areas: 50 to 100 acres
Native vegetation: Post oak, live oak, and mesquite; little bluestem, big bluestem, gramas, and threeawn

Typical Profile

Surface layer:
0 to 12 inches—very dark grayish brown fine sandy loam

Subsoil:
12 to 26 inches—very dark gray sandy clay loam
26 to 53 inches—brown sandy clay loam
53 to 64 inches—light brown sandy clay loam

Underlying material:
64 to 80 inches—pink weakly cemented sandstone with sandy clay loam texture

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None with a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Cuero soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Carbengle soils have sandstone within 40 inches of the surface and are on higher positions.
- The Flatonia soils have sandstone within 40 inches of the surface and are on similar positions.
- The Frelsburg soils are clayey throughout and are on higher positions.
- The Shiner soils have sandstone within 10 inches of the surface and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

The Cuero soil is not limited for pasture.

Cropland

The Cuero soil is not limited for cropland.

Rangeland

The Cuero soil is not limited for rangeland.

Wildlife habitat

The Cuero soil is not limited for wildlife habitat.

Urban development

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate shrink-swell potential and low strength require special consideration when used for specific urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope restricts the use for playgrounds.

Waste management

Major limitations:
- The surface texture and moderate permeability restrict use for wastewater by overland flow and rapid infiltration.

Interpretive Groups

Land capability classification: 2e
Ecological site: Clay Loam PE 44-64

DeA—Degola loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flat plain
Slope: Nearly level with plane to convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Elm and pecan; little bluestem, big bluestem, switchgrass, Indiangrass, Texas wintergrass, and wildrye

Typical Profile

Surface layer:
0 to 18 inches—very dark grayish brown loam

Subsurface layer:
18 to 34 inches—very dark gray clay loam

Subsoil:
34 to 54 inches—very dark grayish brown clay loam
58 to 70 inches—dark grayish brown sandy clay loam
70 to 80 inches—light olive brown sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: Occasional for brief duration from June to September
Runoff: Negligible
Permeability: Moderate
Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Degola soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Bosque soils are calcareous and on similar positions.
- The Tinn soils are clayey throughout and are on similar positions.
- The Waelder soils are sandy throughout and are on slightly higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- Occasional flooding during the growing season restricts seedbed preparation and growth of most crops.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- Occasional flooding during the growing season restricts seedbed preparation and growth of most crops.

Rangeland

The Degola soil is not limited for rangeland.

Wildlife habitat

The Degola soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- Occasional flooding severely restricts this soil for urban uses.

Recreation

Major limitations:
- Occasional flooding severely restricts the use for camp areas.

Minor limitations:
- Occasional flooding requires special consideration when used for playgrounds.

Waste management

Major limitations:
- Occasional flooding, surface texture, and moderate permeability severely restrict this soil for the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 2w
Ecological site: Loamy Bottomland PE 31-44

DfA—Degola clay loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flats and depressions
Slope: Nearly level with plane surfaces
Shape of areas: Long and wide along creeks.
Size of areas: 50 to 200 acres
Native vegetation: Elm and pecan; little bluestem, big bluestem, switchgrass, Indiangrass, Texas wintergrass, and wildrye

Typical Profile

Surface layer:
0 to 11 inches—dark gray clay loam

Subsurface layer:
11 to 25 inches—grayish brown clay loam

Subsoil:
25 to 51 inches—grayish brown fine sandy loam
51 to 80 inches—very pale brown and pale brown sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: Frequent for brief duration from June to September
Runoff: Negligible
Permeability: Moderate

Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Degola soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Bosque soils are calcareous and on similar positions.
- The Cost soils are salty and on similar positions.
- The Imogene soils are salty and on higher positions.
- The Tinn soils are clayey throughout and are on similar positions.
- The Waelder soils are sandy throughout and are on slightly higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.

Cropland

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The frequent flooding requires special consideration when used for rangeland.

Wildlife habitat

Major limitation:
- The frequent flooding limits the growth of food crops and cover required for openland wildlife habitat.

Urban development

Major limitations:
- Frequent flooding severely restricts this soil for urban uses.

Recreation

Major limitations:
- The hazard of frequent flooding severely restricts the use for playgrounds and camp areas.

Minor limitations:

- The hazard of frequent flooding requires special consideration when used for picnic areas, paths and trails.

Waste management

Major limitations:

- Frequent flooding severely restricts the application and treatments of waste materials.

Interpretive Groups

Land capability classification: 5w
Ecological site: Loamy Bottomland PE 31-44

DmB—Dimebox clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with plain to convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Little bluestem, big bluestem, switchgrass, Indiangrass, and brownseed paspalum

Typical Profile

Surface layer:
0 to 6 inches—very dark gray clay

Subsurface layer:
6 to 17 inches—very dark gray clay

Subsoil:
17 to 34 inches—very dark gray clay
34 to 55 inches—yellowish brown clay
55 to 64 inches—yellowish brown clay

Underlying material:
64 to 80 inches—light gray clay interbedded with shale fragments

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Dimebox soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Benchley soils have loamy surface layers and are on similar positions.
- The Dreyer soils have higher chromas throughout and are on higher positions.
- The Luling soils have higher chromas in the surface layer and are on similar positions.

Land Uses

Major land use: Cropland
Other land uses: Rangeland and pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Dimebox soil is not limited for rangeland.

Wildlife habitat

The Dimebox soil is not limited for wildlife habitat.

Urban development

Major limitations:
- The very high shrink-swell, low strength, and clayey texture severely restrict use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:
- The clayey texture restricts the use for golf fairways.

Minor limitations:

- The very slow permeability, clayey texture, and slope restrict use for specific recreational development.

Waste management

Major limitations:

- The very slow permeability and very high runoff restrict use for the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 2e
Ecological site: Blackland PE 44-64

DyC2—Dreyer clay, 3 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Shoulder and backslopes
Slope: Gently sloping with plain to convex surfaces
Shape of areas: Irregular
Size of areas: 30 to 500 acres
Native vegetation: Little bluestem, big bluestem, Texas wintergrass, gamagrass, wildrye, and Indiangrass

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown clay

Subsoil:
3 to 18 inches—olive brown clay
18 to 43 inches—light olive brown clay

Underlying material:
43 to 80 inches—light brownish gray clay

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Dreyer soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Kurten soils have sandy loam surface layers and are in lower positions.
- The Luling soils are noncalcareous and are on similar or lower positions.
- The Normangee soils have loamy surface layers and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- Because of the erosion 25 to 75 percent of the original topsoil special consideration is required to maintain productivity when used as pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The hazard of erosion on slopes from 3 to 5 percent requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- Because of the erosion of a significant portion of the original topsoil, special grazing management is required to maintain productivity when used as rangeland.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- Because of the erosion of a significant portion of the original topsoil, production of plants desirable for wildlife food is restricted.

Urban development

Major limitations:

- Very high shrink-swell potential, low strength and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The clayey texture restricts the use for golf fairways.

Minor limitations:

- The very slow permeability and clayey texture restrict use for specific recreational development.
- The gently sloping terrain requires special consideration when used for playgrounds.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Eroded Blackland PE 44-64

DyE—Dreyer clay, 5 to 12 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Shoulder and Backslopes
Slope: Moderately sloping and strongly sloping with plain to convex surfaces
Shape of areas: Irregular
Size of areas: 20 to 150 acres
Native vegetation: Little bluestem, big bluestem, Texas wintergrass, gamagrass, wildrye, and Indiangrass

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown clay

Subsoil:
7 to 38 inches—light yellowish brown clay
38 to 42 inches—pale yellow clay

Underlying material:
42 to 80 inches—light gray interbedded shale that has clay texture

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high

Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: Very high
Water erosion hazard: Severe

Composition

Dreyer soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Kurten soils have sandy loam surface layers and are in lower positions.
- The Luling soils are noncalcareous and are on similar or lower positions.
- The Normangee soils have loamy surface layers and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The hazard of erosion on slopes from 8 to 12 percent requires special consideration when used for pasture.

Cropland

Major limitations:
- The severe hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.
- The very slow permeability and very high runoff severely restrict the use of this soil for cropland.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Rangeland

The Dreyer soil is not limited for rangeland.

Wildlife habitat

The Dreyer soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- This very high shrink-swell potential, low strength, and clayey texture severely restrict use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Minor limitations:
- The strongly sloping terrain restricts the use for urban development.

Recreation

Major limitations:
- The strongly sloping terrain and clayey texture severely restrict construction for playgrounds and golf fairways.

Minor limitations:
- The strongly sloping terrain, very slow permeability, and clayey texture require special consideration when used for picnic areas, camp areas, paths, and trails.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- The hazard of surface runoff on slopes of 5 to 12 percent requires special consideration when applying waste materials.

Interpretive Groups

Land capability classification: 6e
Ecological site: Eroded Blackland PE 44-64

EcB—Ecleto sandy clay loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Mesquite, spiny hackberry, and live oak; Texas wintergrass, sideoats grama, buffalograss, and curlymesquite; pricklypear, agarito, and lotebush

Typical Profile

Surface layer:
0 to 4 inches—dark gray sandy clay loam

Subsoil:
4 to 12 inches—dark gray sandy clay loam
12 to 18 inches—grayish brown gravelly clay loam

Underlying material:
18 to 80 inches—light gray weakly cemented sandstone interbedded with siltstone of loam texture

Soil Properties

Depth: Shallow
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High

Permeability: Slow
Available water capacity: Low
Root zone: Shallow
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Ecleto soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Gillett soils are moderately deep and are on similar positions.
- The Pavelek soils are clayey and are on similar positions.
- The Shalba soils fine sandy loam surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.
- The shallow soil severely restricts plant root penetration, growth, and yield.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.
- The shallow soil severely restricts root penetration, growth, and yield.

Minor limitations:
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- The shallow soil severely restricts root penetration and plant growth.

Minor limitations:
- The low available water capacity severely restricts plant growth.

Wildlife habitat

This soil is not limited for its use as openland and rangeland wildlife habitat.

Urban development

Major limitations:
The shallow depth to rock, shrink-swell potential, and low strength require special consideration when used for urban development.

Recreation

Major limitations:
The shallow depth to rock severely restricts the use for specific recreational development.

Waste management

Major limitations:

- This shallow depth to rock severely restricts the application and treatment of waste materials because of the potential for groundwater contamination.
- The slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- The low water holding capacity and droughtiness hinders plant growth and restricts the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Shallow PE 31-44

EcC—Ecleto sandy clay loam, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Shoulder and backslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Mesquite, spiny hackberry, and live oak; Texas wintergrass, sideoats grama, buffalograss, and curlymesquite; pricklypear, agarito, and lotebush

Typical Profile

Surface layer:
0 to 4 inches—very dark gray sandy clay loam

Subsoil:
4 to 18 inches—black clay

Underlying material:
18 to 80 inches—light gray weakly cemented sandstone interbedded with siltstone of loam texture

Soil Properties

Depth: Shallow
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Low
Root zone: Shallow
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Ecleto soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Gillett soils are moderately deep and are on similar positions.
- The Pavelek soils are clayey and are on similar positions.
- The Shalba soils are fine sandy loam surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- The shallow soil severely restricts root penetration, growth, and yields.
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The susceptibility of this soil to the effects of erosion requires special consideration when using this soil for pasture.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.
- The shallow soil severely restricts root penetration, growth, and yield.
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.

Minor limitations:
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

Major limitations:
- The shallow soil severely restricts root penetration and plant growth.

Minor limitations:
- The low available water capacity severely restricts plant growth.

Wildlife habitat

This soil is not limited for its use as openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The depth to bedrock, high shrink-swell potential, and low strength require special consideration when used for urban development.

Recreation

Major limitations:
- The depth to bedrock severely restricts the use for specific recreational development.

Waste management

Major limitations:

- The depth to bedrock of less than 20 inches severely restricts it for the application and treatment of waste materials because of the potential for groundwater contamination.
- The slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- The low water holding capacity and droughtiness hinders plant growth and restricts the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Shallow PE 31-44

EdB—Edge fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Post oak and elm; little bluestem, Indiangrass, and beaked panicum

Typical Profile

Surface layer:
0 to 11 inches—brown fine sandy loam

Subsoil:
11 to 31 inches—red clay
31 to 43 inches—yellowish red clay
43 to 52 inches—reddish yellow sandy clay
52 to 59 inches—brownish yellow sandy clay loam

Underlying material:
59 to 80 inches—yellow weathered siltstone that has sandy clay loam texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Edge soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Alum soils have sandy surface layers more than 20 inches thick and are in lower positions.
- The Kurten soils have clayey subsoil layers throughout and are on higher positions.
- The Rosanky soils have low base saturation and are on similar positions.
- The Zack soils are moderately deep and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plants growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Edge soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:

- The moderate erosion hazard restricts the use for paths and trails.

Minor limitations:

- The very slow permeability restricts the use for camp areas, picnic areas, and playgrounds.
- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:

- The very slow permeability and surface texture of this soil may promote wet conditions or seepage which impedes the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

EdC2—Edge fine sandy loam, 2 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: Eroded surfaces
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Post oak and elm; little bluestem, Indiangrass, and beaked panicum

Typical Profile

Surface layer:
0 to 6 inches—brown fine sandy loam

Subsoil:
6 to 12 inches—yellowish red clay
12 to 32 inches—red clay
32 to 40 inches—grayish brown sandy clay loam

Underlying material:
40 to 80 inches—grayish brown weathered siltstone with sandy clay loam texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Edge soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Alum soils have sandy surface layers more than 20 inches thick and are in lower positions.
- The Kurten soils have clayey subsoil layers throughout and are on higher positions.
- The Zack soils are moderately deep and on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- Because of the erosion of 25 to 75 percent of the original topsoil, special consideration is required to maintain productivity when used for pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The hazard of erosion on slopes from 3 to 5 percent requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.
- Because of the erosion of 25 to 75 percent of the original topsoil special consideration is required to maintain productivity when used for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Edge soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:

- The moderate erosion hazard restricts the use for paths and trails.

Minor limitations:

- The very slow permeability and slope restrict use for camp areas and picnic areas.
- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:

- The very slow permeability and surface texture of this soil may promote wet conditions or seepage and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

EdD3—Edge fine sandy loam, 3 to 8 percent slopes, severely eroded

Setting

Landform: Upland
Distinctive surface features: Eroded surfaces
Landscape position: Shoulder and backslopes
Slope: Gently sloping and moderately sloping with concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 300 acres

Native vegetation: Post oak and elm; little bluestem, Indiangrass, and beaked panicum

Typical Profile

Surface layer:
0 to 3 inches—brown fine sandy loam

Subsoil:
3 to 45 inches—dark red clay
45 to 50 inches—red clay
50 to 53 inches—yellowish brown clay loam

Underlying material:
53 to 80 inches—light brownish gray weathered sandstone with sandy clay loam texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Edge soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Dreyer soils are clayey throughout and are on higher positions.
- The Normangee soils have sandy clay loam surface layers and are on similar positions
- Small gullies on similar positions

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- More than 75 percent of the original topsoil has been eroded, severely restricting seedling emergence and survivability because of low fertility and droughtiness.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.

- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Cropland

Major limitations:

- The severe hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.
- More than 75 percent of the original topsoil has been eroded severely restricting seedling emergence and survivability because of low fertility and droughtiness.
- The small gullies limit seedbed preparation and planting.

Minor limitations:

- The moderate available water capacity restricts crop growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust, which restricts crop growth and yields.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

This Edge soil is not limited for the openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:

- The soil severe erosion hazard restricts the use for paths and trails.

Minor limitations:

- The very slow permeability and slope restrict use for camp areas and picnic areas.

Waste management

Major limitations:

- The very slow permeability and surface texture of this soil may promote wet conditions or seepage and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 6e
Ecological site: Claypan Savannah PE 48-68

EdE2—Edge fine sandy loam, 5 to 12 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: Eroded surfaces
Landscape position: Shoulder and backslopes
Slope: Moderately sloping and strongly sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 75 acres
Native vegetation: Post oak and elm; little bluestem, Indiangrass, and beaked panicum

Typical Profile

Surface layer:
0 to 4 inches—brown fine sandy loam

Subsoil:
4 to 15 inches—dark red clay
15 to 40 inches—red clay

Underlying material:
40 to 56 inches—light gray sandy clay loam
56 to 80 inches—grayish brown weathered siltstone with sandy clay loam texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Edge soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Dreyer soils are clayey throughout and are on similar positions.
- The Normangee soils have sandy clay loam surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The severe hazard of erosion, on slopes that range from 8 to 12 percent, requires special consideration when used for pasture.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Cropland

Major limitations:
- The severe hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

This Edge soil is not limited for the openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:
- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:
- The severe erosion hazard restricts the use for paths and trails.

Minor limitations:
- The very slow permeability and slope restrict the use for camp areas and picnic areas.
- The strongly sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:
- The very slow permeability and very high runoff restrict the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 6e
Ecological site: Claypan Savannah PE 48-68

EgC—Edge gravelly fine sandy loam, 2 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: Small stones
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Post oak and elm; little bluestem, Indiangrass, and beaked panicum

Typical Profile

Surface layer:
0 to 3 inches—brown gravelly fine sandy loam

Subsoil:
3 to 28 inches—red clay
28 to 33 inches—red clay
33 to 50 inches—red clay loam

Underlying material:
50 to 80 inches—pale brown weathered siltstone with sandy clay loam texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Edge soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Edge soils without gravel on similar positions.
- The Dreyer soils are clayey throughout and are on higher positions.
- The Normangee soils have sandy clay loam surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat and pasture

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts crop growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Wildlife habitat

The Edge soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:

- The moderate erosion hazard restricts the use for paths and trails.

Minor limitations:

- The very slow permeability and slope restricts the use for camp areas and picnic areas.
- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:

- The very slow permeability and very high runoff hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

EgE—Edge gravelly fine sandy loam, 5 to 12 percent slopes

Setting

Landform: Upland
Distinctive surface features: Small stones on the surface
Landscape position: Shoulder and backslopes
Slope: Moderately sloping and strongly sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Post oak and elm; little bluestem, Indiangrass, and beaked panicum

Typical Profile

Surface layer:
0 to 5 inches—grayish brown gravelly fine sandy loam

Subsoil:
5 to 16 inches—red sandy clay
16 to 32 inches—red clay
32 to 48 inches—yellowish red clay loam

Underlying material:
48 to 80 inches—pale brown weathered siltstone with sandy clay loam texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Edge soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Dreyer soils are clayey throughout and are on higher positions.
- The Edge soils without gravel are on similar positions.

- The Normangee soils with a sandy clay loam surface layer are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat and pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.
- The hazard of erosion on slopes that range from 8 to 12 percent requires special consideration when used for pasture.

Cropland

Major limitations:
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Wildlife habitat

The Edge soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:
- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:
- The moderate erosion hazard restricts the use for paths and trails.

Minor limitations:
- The very slow permeability and slope restrict the use for camp areas and picnic areas.
- The moderately to strongly sloping terrain require special consideration when constructing playgrounds.

Waste management

Major limitations:
- The very slow permeability and very high runoff restrict the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 6e
Ecological site: Claypan Savannah PE 48-68

EkB—Elmendorf-Denhawken complex, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: Alternating highs and lows
Landscape position: Footslopes and toeslopes: Elmendorf—microlows; Denhawken—microhighs
Slope: Very gently sloping
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Mesquite and live oak; little bluestem, trichloris, sideoats grama, lovegrass, Arizona cottontop, and vine-mesquite; cacti

Typical Profile

Elmendorf

Surface layer:
0 to 15 inches—dark grayish brown and very dark gray sandy clay loam

Subsoil:
15 to 27 inches—black sandy clay loam
27 to 54 inches—dark gray, grayish brown and light brownish gray clay
54 to 63 inches—pale yellow clay
63 to 67 inches—pale yellow clay loam
67 to 80 inches—pale yellow sandy clay loam

Denhawken

Surface layer:
0 to 6 inches—dark grayish brown sandy clay loam

Subsoil:
6 to 18 inches—light yellowish brown clay
18 to 45 inches—pale yellow clay
45 to 70 inches—light gray and pale yellow clay

Underlying material:
70 to 80 inches—pale yellow clay

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Elmendorf—high; Denhawken—moderate
Root zone: Very deep
Salinity: Slight
Shrink swell potential: High
Water erosion hazard: Moderate

Composition

Elmendorf soil and similar inclusions: 55 to 65 percent
Denhawken soil and similar inclusions: 30 to 45 percent
Contrasting inclusions: 5 to 10 percent

Contrasting Inclusions

- The Bryde soils have fine sandy loam surface layers and are on similar positions.
- The clayey Dimebox, Luling, and Tordia soils are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity in the Denhawken soil restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity in the Denhawken soil restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of these soils to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity in the Denhawken soil restricts plant growth and yields.

Wildlife habitat

The Elmendorf soil and Denhawken soil are not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength severely restrict the use for urban development.

Minor limitations:

- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very slow permeability and slope restrict the use of these soils for specific recreational development.

Waste management

Major limitations:

- The very slow permeability and surface texture hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: Elmendorf soil—2e; Denhawken soil—3e
Ecological site: Elmendorf soil—Blackland PE 31-44; Denhawken soil—Blackland PE 31-44

EkC—Elmendorf-Denhawken complex, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: Alternating highs and lows
Landscape position: Backslopes and footslopes: Elmendorf—microlows, Denhawken—microhighs
Slope: Gently sloping with undulating concave and convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Mesquite and live oak; little bluestem, trichloris, sideoats grama, lovegrass, Arizona cottontop, and vine-mesquite; cacti

Typical Profile

Elmendorf

Surface layer:
0 to 11 inches—black sandy clay loam

Subsoil:
11 to 26 inches—black clay
26 to 36 inches—grayish brown clay
36 to 62 inches—light olive gray clay

Underlying material:
62 to 80 inches—light gray clay

Denhawken

Surface layer:
0 to 5 inches—very dark brown sandy clay loam

Subsoil:
5 to 21 inches—brown clay
21 to 42 inches—light yellowish brown clay
42 to 60 inches—light brownish gray clay

Underlying material:
60 to 80 inches—light gray clay

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Elmendorf—high; Denhawken—medium
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Elmendorf soil and similar inclusions: 55 to 65 percent
Denhawken soil and similar inclusions: 30 to 45 percent
Contrasting inclusions: 5 to 10 percent

Contrasting Inclusions

- The Bryde soils have fine sandy loam surface layers and are on similar positions.
- The Gillett soils are moderately deep and are on higher positions.
- The Tordia soils are clayey throughout and on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The hazard of erosion on slopes from 3 to 5 percent requires special consideration when used for cropland.
- The susceptibility of these soils to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Elmendorf soil and Denhawken soil are not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength severely restrict use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and slope restrict these soils use for specific recreational development.
- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:
- The very slow permeability and very high runoff restrict the application and treatment of waste materials.

Interpretive Groups

Land capability classification: Elmendorf soil—3e; Denhawken soil—3e
Ecological site: Elmendorf soil—Blackland PE 31-44; Denhawken soil—Blackland PE 31-44

EsB—Eloso clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Mesquite, spiny hackberry, and live oak; Texas wintergrass, sideoats grama, bristlegrass, Hall panicum, Texas grama, threeawn, and red grama; agarito, pricklypear, and lotebush

Typical Profile

Surface layer:
0 to 9 inches—very dark gray clay

Subsoil:
9 to 24 inches—dark gray clay
24 to 37 inches—grayish brown clay

Underlying material:
37 to 80 inches—white noncalcareous weakly cemented siltstone of loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Eloso soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Coy soils are very deep, have loamy surfaces, and are on similar positions.
- The Pavelek soils are shallow and on higher positions.
- The Rosenbrock soils are deep and in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The moderate available water capacity restricts plant growth and yields.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The moderate available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Eloso soil is not limited for rangeland.

Wildlife habitat

The Eloso soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.

Minor limitations:
- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:
- The clayey texture restricts the use for golf fairways.

Minor limitations:
- The very slow permeability, clayey texture and slope restrict the use for camp areas, picnic areas, and playgrounds.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material.
- The depth of less than 40 inches to bedrock requires special consideration when waste materials are applied, because of the potential for groundwater contamination.
- The depth of less than 40 inches to bedrock restricts the construction of ponds for waste storage or treatment, because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 3e
Ecological site: Rolling Blackland PE 31-44

FnB—Flatonia sandy clay loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Live oak; Texas wintergrass, little bluestem, buffalograss, sideoats grama, and silver bluestem

Typical Profile

Surface layer:
0 to 12 inches—very dark gray sandy clay loam

Subsoil:
12 to 33 inches—dark gray clay
33 to 49 inches—grayish brown and light brownish gray clay
49 to 54 inches—light gray clay

Underlying material:
54 to 80 inches—pale yellow weakly cemented siltstone with silty clay loam texture

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Flatonia soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Arol soils are moderately deep and on similar positions.
- The Greenvine soils are clayey throughout and on similar positions.
- The Shalba soils have sandstone bedrock less than 20 inches and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Flatonia soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength restrict the use for specific urban development.

Minor limitations:
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:

- The slope restricts the use for playgrounds.

Waste management

Major limitations:

- The slow permeability, depth, and surface texture of this soil restrict the application and treatment of waste materials**Interpretive Groups**

Land capability classification: 2e
Ecological site: Clay Loam PE 44-64

FsB—Frelsburg clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Live oak; little bluestem, big bluestem, eastern gamagrass, sideoats grama, Indiangrass, and switchgrass

Typical Profile

Surface layer:
0 to 9 inches—very dark gray clay

Subsoil:
9 to 43 inches—gray clay
43 to 63 inches—grayish brown clay
63 to 72 inches—light gray clay

Underlying material:
72 to 80 inches—light gray clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Frelsburg soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Carbengle soils are loamy throughout and are on similar positions.

- The Greenvine soils are less than 40 inches in depth and on similar positions.
- The Weesatche soils are loamy throughout and on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Frelsburg soil is not limited for rangeland.

Wildlife habitat

The Frelsburg soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The very high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:
- The clayey texture restricts the use for golf fairways.

Minor limitations:
- The very slow permeability, slope, and clayey texture restrict the use for specific recreational development.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 2e
Ecological site: Blackland PE 44-64

FsC—Frelsburg clay, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Gently sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Live oak; little bluestem, big bluestem, eastern gamagrass, sideoats grama, Indiangrass, and switchgrass

Typical Profile

Surface layer:
0 to 10 inches—very dark gray clay

Subsoil:
10 to 43 inches—gray clay
43 to 63 inches—grayish brown clay
63 to 72 inches—pale yellow clay

Underlying material:
72 to 80 inches—light gray clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Frelsburg soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Carbengle soils are loamy throughout and on similar positions.
- The Greenvine soils are less than 40 inches deep and on similar positions.
- The Weesatche soils are loamy throughout and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.

Rangeland

The Frelsburg soil is not limited for rangeland.

Wildlife habitat

The Frelsburg soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The very high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:
- The clayey texture restricts the use for golf fairways.

Minor limitations:
- The very slow permeability, slope, and clayey texture restrict the use for specific recreational development.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Minor limitations:
- The slope restricts the use for the application of waste material because of the potential of very high surface runoff.

Interpretive Groups

Land capability classification: 3e
Ecological site: Blackland PE 44-64

GfA—Ganado clay, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flat plain
Slope: Nearly level with plane surfaces
Shape of areas: Linear along stream
Size of areas: 100 to 300 acres
Native vegetation: Pecan, elm, and live oak; little bluestem, big bluestem, switchgrass, Indiangrass, Texas wintergrass, and wildrye

Typical Profile

Surface layer:
0 to 13 inches—very dark gray clay

Subsoil:
13 to 35 inches—very dark gray clay
35 to 59 inches—black clay
59 to 68 inches—very dark gray clay
68 to 80 inches—dark grayish brown clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: Frequent for brief duration from January to December
Runoff: High
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Slight

Composition

Ganado soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Bosque soils are loamy and are in lower positions.
- The Degola soils have loamy surface layers and are on similar positions.
- The Waelder soils are sandy throughout and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:

- The hazard of frequent flooding severely restricts seedbed preparation and crop growth.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:

- The hazard of frequent flooding severely restricts seedbed preparation and crop growth.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The frequent flooding requires special consideration when used as rangeland.

Wildlife habitat

Major limitations:

- There are no major limitations.

Minor limitations:

- The frequent flooding limits the amount of grain and seed crops for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The hazard of frequent flooding severely restricts this soil for urban uses.
- The very high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The hazard of frequent flooding severely restricts the use for playgrounds and camp areas.
- The hazard of frequent flooding, very slow permeability, and clayey texture requires special consideration when used for recreational development.

Waste management

Major limitations:
- The hazard of frequent flooding severely restricts this soil for the application and treatment of waste material.
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 5w
Ecological site: Clayey Bottomland

GhC—Gholson loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Oblong
Size of areas: 15 to 250 acres
Native vegetation: Little bluestem, big bluestem, switchgrass, and Indiangrass

Typical Profile

Surface layer:
0 to 12 inches—brown loamy fine sand

Subsoil:
12 to 45 inches—yellowish red sandy clay loam
45 to 62 inches—reddish yellow sandy clay loam

Underlying material:
62 to 80 inches—reddish yellow fine sandy loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: High
Root zone: Very deep
Salinity: None
Shrink-swell potential: Low
Water erosion hazard: Moderate

Composition

Gholson soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Axtell soils have fine sandy loam surface layers and are on higher positions.

- The Luckenbach soils have loamy surface layers and are on similar positions.
- The Styx soils have sandy surface layers more than 20 inches thick and are on similar positions.
- The Sunev soils have dark loamy calcareous surface layers and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

The Gholson soil is not limited for pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Gholson soil is not limited for rangeland.

Wildlife habitat

The Gholson soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- There are no major limitations.

Minor limitations:
- The low strength restricts the use for local roads and streets.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:
- The surface texture and moderate permeability restrict the use for treatment of wastewater.

Interpretive Groups

Land capability classification: 3e
Ecological site: Sandy Loam PE 48-68

GkC—Gillett fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Post oak, live oak, and mesquite; little bluestem, big bluestem, silver bluestem, Texas wintergrass, bristlegrass, threeawn, and dropseed; condalia and agarito

Typical Profile

Surface layer:
0 to 5 inches—grayish brown fine sandy loam

Subsoil:
5 to 27 inches—brown clay
27 to 34 inches—pale brown sandy clay loam

Underlying material:
34 to 80 inches—light gray noncemented sandstone with texture of fine sandy loam

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Very slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Gillett soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 85 percent

Contrasting Inclusions

- The Bryde soils are deep and are in lower positions.
- The Ecleto soils are shallow and on higher positions.
- The Elmendorf and Denhawken soils are deep and on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity restricts plant growth and yields.
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The low available water capacity restricts plant growth and yields.

Wildlife habitat

The Gillett soil is not limited for wildlife habitat.

Urban development

Major limitations:

- There are no major limitations.

Minor limitations:

- The high shrink-swell potential in the subsoil horizons require special consideration when used for urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:
- The slope and very slow permeability restrict the use for the application of waste material because of the potential of very high surface runoff.
- The depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.

Interpretive Groups

Land capability classification: 3e
Ecological site: Tight Sandy Loam PE 19-31

GkF—Gillett fine sandy loam, 8 to 20 percent slopes, very stony

Setting

Landform: Upland
Distinctive surface features: Surface fragments average about 20 percent gravel, 10 percent stones, 6 percent cobbles, and 6 percent boulders
Landscape position: Summit and shoulder slopes
Slope: Strongly sloping and moderately steep with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Mesquite, post oak, live oak; little bluestem, big bluestem, silver bluestem, Texas wintergrass, bristlegrass, threeawn, and dropseed; condalia and agarito

Typical Profile

Surface layer:
0 to 4 inches—dark brown fine sandy loam

Subsoil:
4 to 23 inches—dark brown sandy clay
23 to 34 inches—light brown sandy clay loam

Underlying material:
34 to 80 inches—light gray sandstone with texture of fine sandy loam

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Slow
Available water capacity: Low
Root zone: Moderately deep

Salinity: Very slight
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Gillett soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Ecleto soils are shallow and in lower positions.
- Areas of rock outcrop are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat

Management Concerns

Pasture

Major limitations:
- The stones on the surface severely restricts the use for pasture
- The hazard of erosion on slopes greater than 12 percent severely restricts the use for pasture.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The low available water capacity restricts plant growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- The stones on the surface and steep slope severely restrict the use of machinery for seedbed preparation, seedling emergence, and growth.
- The severe hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.

Minor limitations:
- The low available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The stones on the surface may restrict seedling emergence and plant growth.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- The stony surface layer restricts seedling emergence and plant growth.

Urban development

Major limitations:
- The moderately steep terrain of this area severely restricts the use for urban development.
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Recreation

Major limitations:
- The moderately steep terrain severely restricts the use for camp areas, picnic areas, and playgrounds.

Minor limitations:
- The moderately steep terrain requires special consideration when constructing paths and trails.
- The stones on the surface make it difficult to maintain a vegetative cover, severely restricting these areas for recreational uses.

Waste management

Major limitations:
- Slopes greater than 12 percent severely restrict the application of waste material because of the potential of excessive surface runoff.
- The many stones on the surface severely restrict the application of waste material.
- The depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.

Interpretive Groups

Land capability classification: 7s
Ecological site: Tight Sandy Loam PE 19-31

GP—Gravel Pits

This map unit consists of areas from which gravel, sand, and clay has been excavated or mined. In most areas the material has been excavated to a depth of 3 to 25 feet. Most of the pits are in areas of Axtell, Burlewash, Crockett, Edge, Jedd, and Silvern. Individual areas are irregular in shape and range from 3 to 75 acres in size. Smaller pits are indicated by a pick and shovel symbol.

The surface material in these pits is gravel and soil material that has been disturbed during excavation. The original soils were either pushed to the perimeter of the pits or carried away with the gravel. Drainage, permeability, the shrink-swell potential, surface runoff, flooding, ponding, and available water capacity vary in this map unit. The hazards of water erosion are slight. Most areas support little or no vegetation.

This map unit is not suited to rangeland and cropland, wildlife habitat, urban development, or recreational uses unless reclamation measures are applied. These measures generally include grading and shaping, spreading topsoil, and establishing a permanent plant cover.

Interpretive Groups

Land capability classification: 8s
Ecological site: Not assigned an Ecological Site

GrB—Greenvine clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Little bluestem, sideoats grama, switchgrass, Indiangrass, and vine mesquite

Typical Profile

Surface layer:
0 to 8 inches—very dark gray clay

Subsoil:
8 to 28 inches—dark gray clay
28 to 38 inches—gray clay

Underlying material:
38 to 80 inches—pale yellow weakly cemented tuffaceous siltstone

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Greenvine soil and similar inclusions: 80 to 95 percent
Contrasting inclusions: 5 to 20 percent

Contrasting Inclusions

- The Arol soils have loamy surface layers and are on similar positions.
- The Flatonia soils have a loamy surface layer and are on similar positions.

- The Shalba soils are shallow and are on higher positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and cropland

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The moderately deep depth to bedrock restricts root penetration, growth, and yields of crops and grasses used for pasture.
- The low available water capacity restricts plant growth and yields.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The low available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity restricts plant growth and yields.

Wildlife habitat

The Greenvine soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The very high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The clayey texture restricts the use for golf fairways.

Minor limitations:

- The very slow permeability may promote wet conditions and hinder recreation use.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material.
- The soil depth of less than 40 inches restricts application and treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 2e
Ecological site: Blackland PE 44-64

GrC—Greenvine clay, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Little bluestem, sideoats grama, switchgrass, Indiangrass, and vine mesquite

Typical Profile

Surface layer:
0 to 11 inches—black clay

Subsoil:
11 to 20 inches—black clay
20 to 38 inches—dark grayish brown clay

Underlying material:
38 to 80 inches—light gray weakly cemented tuffaceous siltstone

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Severe

Composition

Greenvine soil and similar inclusions: 80 to 95 percent
Contrasting inclusions: 5 to 20 percent

Contrasting Inclusions

- The Arol soils have loamy surface layers and are on similar positions.
- The Flatonia soils that have loamy surface layers and on similar positions.
- The Shalba soils are shallow and are on higher positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and cropland

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The low available water capacity restricts plant growth and yields.
- The moderately deep depth to bedrock restricts root penetration, growth, and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.

Cropland

Major limitations:

- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The low available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation and planting.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity restricts plant growth.
- The moderately deep depth to bedrock restricts the use for rangeland.

Wildlife habitat

The Greenvine soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The very high shrink-swell potential, low strength, clayey texture, and depth severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The clayey texture restricts the use for golf fairways.

Minor limitations:

- The very slow permeability, clayey texture, and slope restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material.
- The soil depth of less than 40 inches restricts application and treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 3e
Ecological site: Blackland PE 44-64

GtB—Griter fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 500 acres
Native vegetation: Mesquite and spiny hackberry; little bluestem, feathery bluestem, Nash windmillgrass, hooded windmillgrass, Texas bristlegrass, and plains bristlegrass; pricklypear

Typical Profile

Surface layer:
0 to 7 inches—brown fine sandy loam
Subsoil:
7 to 16 inches—reddish brown sandy clay
16 to 37 inches—red sandy clay
37 to 56 inches—reddish yellow and mottled brown, yellow, and red sandy clay loam
Underlying material:
56 to 80 inches—very pale brown sandy clay loam with few layers of weakly cemented sandstone

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet

Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Griter soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Ecleto soils are less than 20 inches deep to sandstone and are in higher positions.
- The Gillett soils are moderately deep and are on higher positions.
- The Nusil soils have sandy surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation and planting.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.

Wildlife habitat

The Griter soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The clayey texture, moderate shrink-swell potential, and droughty condition restricts the use for urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope and droughty condition restricts the use for playgrounds and golf fairways.

Waste management

Major limitations:
- There are no major limitations.

Minor limitations:
- The slow permeability and surface texture hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Tight Sandy Loam PE 31-44

GtC2—Griter fine sandy loam, 2 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Mesquite and spiny hackberry; little bluestem, feathery bluestem, Nash windmillgrass, hooded windmillgrass, Texas bristlegrass, and plains bristlegrass; pricklypear

Typical Profile

Surface layer:
0 to 2 inches—dark brown fine sandy loam

Subsoil:
2 to 18 inches—reddish brown clay
18 to 31 inches—strong brown sandy clay
31 to 44 inches—yellowish brown sandy clay
44 to 51 inches—very pale brown sandy clay

Underlying material:
51 to 80 inches—light gray sandy clay loam

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Moderate

Composition

Griter soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Ecleto soils are less than 20 inches deep to sandstone and are on higher positions.
- The Gillett soils are moderately deep and are on higher positions.
- The Nusil soils have sandy surface layers and on similar positions

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.
- Because of erosion, 25 to 75 percent of the original topsoil has been removed, special consideration is required to maintain productivity when used as pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.

- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- A significant portion of the original topsoil has been removed because of erosion. Special grazing management is required to maintain productivity when used for rangeland.

Wildlife habitat

The Griter soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The clayey texture, moderate shrink-swell potential, and droughty condition restrict the use for urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope and droughty condition restrict the use for playgrounds and golf fairways.

Waste management

Major limitations:
- The slope and high runoff restrict the application of waste materials.

Minor limitations:
- The slow permeability and surface texture hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Tight Sandy Loam PE 31-44

GU—Gullied Land

This map unit consists of eroded soils on uplands (fig. 9). Areas are irregular in shape and range from 5 to 65 acres in size. Slope ranges from 5 to 15 percent.

Gullied Land consists of areas that have been severely eroded by water. Eighty to ninety percent of the area has been destroyed by closely spaced, deep gullies or by an intricate network of shallow and deep gullies. Most of the original network of V-shaped and U-shaped gullies and channels are 1 to 25 feet deep and 5 to 30 feet wide. The exposed soil material is light colored, alkaline sandy clay loam, clay loam,

Figure 9.—Gullied Land used for Rangeland. The area is void of vegetation and is subject to water erosion.

clay, or fine sandy loam. Small areas between gullies have near normal profiles, but most gullies are actively being eroded by water.

Included with this map unit in mapping are small areas of gullied land that have slopes less than 5 percent. Also included are small area of Bryde, Coy, Ecleto, Eloso, Gillett, Miguel, Monteola, Pavelek, Rosenbrock, Shalba, and Tordia soils. Included soils make up less than 20 percent of this map unit.

Gullied Land is used mainly for wildlife habitat.

This unit has little value for farming. Major reclamation is needed if used for farming or a construction site. Sediment eroded from areas of this unit is a major concern on local streams. The present vegetative cover is not adequate to protect against further erosion. The hazard of water erosion is very severe.

Interpretive Groups

Land capability classification: 7e
Ecological site: Not assigned an Ecological Site

ImA—Imogene fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Terrace
Distinctive surface features: Vegetation is stunted and sparse
Landscape position: Risers and treads
Slope: Nearly level with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 10 to 75 acres
Native vegetation: Mesquite and spiny hackberry; hooded windmillgrass, bristlegrass, lovegrass, grass burr, sand dropseed, Hall panicum, threeawn, and red grama; white brush and wolfberry

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown fine sandy loam

Subsoil:
4 to 8 inches—dark grayish brown sandy clay loam

8 to 16 inches—dark gray sandy clay loam
16 to 47 inches—grayish brown clay loam
47 to 68 inches—light gray sandy clay loam

Underlying material:
68 to 80 inches—light gray fine sandy loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Very slow
Available water capacity: Low
Root zone: Very deep
Salinity: Strong
Shrink swell potential: Moderate
Water erosion hazard: Slight

Composition

Imogene soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Cost soils have higher salinity levels and are in lower positions.
- The Bryde soils have clayey subsoils and are on higher positions.
- The Degola soils are nonsaline and are in lower positions.
- The Rutersville soils have loamy fine sand surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.
- The strong salinity severely restricts germination, survivability, and plant growth.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.
- The strong salinity severely restricts germination, survivability, and crop growth.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict seedbed preparation and planting.

Rangeland

Major limitations:

- The strong saline condition restricts the use for rangeland.
- The strong saline condition severely restricts germination and plant growth.

Minor limitations:

- The low available water capacity restricts the use for rangeland.

Wildlife habitat

Major limitations:

- The strong salinity severely restricts the germination and growth of plants used as food and cover for wildlife habitat.
- The strong saline condition severely restricts germination and plant growth.

Minor limitations:

- The low available water capacity severely restricts plant growth.

Urban development

Major limitations:

- The strongly saline condition severely restricts the use for urban development

Minor limitations:

- The moderate shrink-swell potential and low strength restricts the use for urban development.

Recreation

Major limitations:

- The strong saline condition limits plant growth, severely restricting these areas for recreational uses.
- The very slow permeability can cause wet condition, restricting these areas for recreational uses.

Waste management

Major limitations:

- The high sodium levels hinder plant growth, severely restricting the application and treatment of waste materials.
- The high salt levels hinder plant growth, severely restricting the application of waste material.

Minor limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material.
- The low water holding capacity and droughty condition hinders plant growth, and restricts the application of waste material.

Interpretive Groups

Land capability classification: 4s
Ecological site: Tight Sandy Loam PE 31-44

JsC—Jedd gravelly fine sandy loam, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: Small stones and gravels
Landscape position: Backslopes and footslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Oval to oblong
Size of areas: 10 to 40 acres
Native vegetation: Post oak; yaupon; little bluestem, purpletop tridens, annual forbs, and grasses

Typical Profile

Surface layer:
0 to 7 inches—brown gravelly fine sandy loam

Subsurface layer:
7 to 12 inches—pale brown gravelly fine sandy loam

Subsoil:
12 to 30 inches—red clay
30 to 37 inches—red sandy clay
Underlying material:
37 to 80 inches—light gray weakly cemented sandstone of fine sandy loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Moderately slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: None
Shrink swell potential: Moderate
Water erosion hazard: Moderate

Composition

Jedd soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Edge soils are deep, on similar positions, and have higher base saturation in the subsoil.
- The Rosanky soils are deep and are on similar positions.
- The Silstid soils have sandy surface layers greater than 20 inches thick.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:

- The low available water capacity severely restricts plant growth and yields.

Minor limitations:

- The moderately deep depth to bedrock restricts root penetration and plant growth.

Cropland

Major limitations:

- The low available water capacity severely restricts crop growth and yields.

Minor limitations:

- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The low available water capacity severely restricts plant growth.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

Wildlife habitat

This soil is not limited for openland wildlife habitat.

Urban development

Major limitations:

- The low strength restricts the use for local roads and streets.

Minor limitations:

- The clayey texture, depth, moderate shrink-swell potential, and small stones restrict the use for urban development.

Recreation

Major limitations:

- The small stones require special consideration when constructing playgrounds.

Minor limitations:

- The soil small stones and depth restrict the use for playgrounds and golf fairways.

Waste management

Major limitations:

- The soil depth of less than 40 inches, slow permeability, surface texture, and acid reaction require special consideration when waste materials are applied, because of the potential for groundwater contamination.
- The low water holding capacity and droughty condition hinders plant growth and restricts the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Sandstone Hill PE 48-68

JsE—Jedd gravelly fine sandy loam, 5 to 15 percent slopes

Setting

Landform: Upland
Distinctive surface features: Large and small stones
Landscape position: Shoulder and backslopes
Slope: Moderately sloping to moderately steep
Shape of areas: Long and narrow bands across the slope
Size of areas: 15 to 200 acres
Native vegetation: Post oak; yaupon; little bluestem, purpletop tridens, annual forbs, and grasses

Typical Profile

Surface layer:
0 to 12 inches—reddish brown gravelly fine sandy loam

Subsoil:
12 to 30 inches—dark red clay

Underlying material:
30 to 80 inches—yellowish red sandstone

Soil Properties

Depth: Moderately deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Moderately slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: None
Shrink swell potential: Moderate
Water erosion hazard: Severe

Composition

Jedd soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Edge soils have higher base saturation and are on similar positions.

- The Rosanky soils are deep and are on similar to gently sloping positions.
- The Silstid soils have sandy surface layers greater than 20 inches thick and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.
- The hazard of erosion on slopes greater than 12 percent severely restricts the use for pasture.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity severely restricts plant growth.

Wildlife habitat

This soil is not limited for use as openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The clayey texture, depth, moderate shrink-swell potential, and small stones restrict the use for urban development.

Recreation

Major limitations:

- The small stones require special consideration when constructing playgrounds.
- The moderately sloping to moderately steep slope requires special consideration for recreational development.

Minor limitations:

- The small stones and depth restrict the use for playgrounds and golf fairways.

Waste management

Major limitations:

- The soil depth of less than 40 inches, slow permeability, and surface texture require special consideration when waste materials are applied because of the potential for groundwater contamination.
- The low water holding capacity and droughty condition hinders plant growth and restricts the application and treatment of waste materials.
- The moderately sloping to moderately steep slope and high runoff restrict the use for waste management.

Interpretive Groups

Land capability classification: 6e
Ecological site: Sandstone Hill PE 48-68

KuB—Kurten fine sandy loam, 2 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Post oak; yaupon; little bluestem, purpletop tridens, annual forbs, and grasses

Typical Profile

Surface layer:
0 to 5 inches—light brownish gray fine sandy loam

Subsoil:
5 to 12 inches—red clay
12 to 24 inches—yellowish brown clay
24 to 45 inches—light yellowish brown clay
45 to 50 inches—light gray clay

Underlying material:
50 to 65 inches—pale yellow shale that has texture of clay loam
65 to 80 inches—pale yellow shale that has texture of clay loam

Soil Properties

Depth: Deep
Drainage class: Well drained

Water table: None within a depth of 6 feet.
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink swell potential: High
Water erosion hazard: Moderate

Composition

Kurten soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Crockett soils are more alkaline in the subsoil and are on similar positions.
- The Edge soils have clay subsoil that decreases with depth and are on similar positions.
- The Normangee soils have clay loam surfaces and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil restricts root penetration which limits growth and yields.
- The moderate available water capacity restricts plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The hazard of soil erosion restricts the use for cropland.
- The dense clayey subsoil restricts root penetration which limits growth and yields.
- When dry, the soil is droughty and forms a surface crust which limits growth and yields.
- The moderate available water capacity restricts crop growth and yields.

Rangeland

The Kurten soil is not limited for rangeland.

Wildlife habitat

The Kurten soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture and droughty condition restricts the use for shallow excavations and lawns and landscaping.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The gently sloping terrain requires special consideration when constructing playgrounds.
- The very slow permeability and droughty condition restrict the use for camp areas, picnic areas, and golf fairways.

Waste management

Major limitations:

- The very slow permeability and surface texture of this soil hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

LeB—Leming loamy fine sand, 0 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Footslopes and toeslopes
Slope: Nearly level and very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 250 acres
Native vegetation: Mesquite and oaks; hooded windmillgrass, fringeleaf paspalum, threeawn, fall witchgrass, silver bluestem, and little bluestem

Typical Profile

Surface layer:
0 to 15 inches—brown loamy fine sand
Subsurface:
15 to 29 inches—pale brown loamy fine sand

Subsoil:
29 to 41 inches—light brownish gray sandy clay
41 to 49 inches—very pale brown sandy clay
49 to 80 inches—very pale brown sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained

Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Very slight
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Leming soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Griter soils have loamy surface layers and are on higher positions.
- The Nusil soils have loamy subsoils and are on similar positions.
- The Papalote soils have sandy surface layers less than 20 inches thick and are on similar positions.
- The Rhymes soils have sandy surface layers more than 40 inches thick and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

The Leming soil is not limited for rangeland.

Wildlife habitat

The Leming soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The potential for sloughing severely restricts shallow excavations.

Minor limitations:
- The shrink-swell potential and droughty condition restrict the use for specific urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The sandy texture and droughty condition require special consideration when used for recreational development.

Waste management

Major limitations:
- The slow permeability and sandy surface texture hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Loamy Sand PE 31-44

LkA—Luckenbach sandy clay loam, 0 to 1 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Nearly level with plane surfaces
Shape of areas: Irregular
Size of areas: 50 to 300 acres
Native vegetation: Post oak; Arizona cottontop, brownseed paspalum, little bluestem, sideoats grama, switchgrass, and plains bristlegrass

Typical Profile

Surface layer:
0 to 7 inches—dark brown sandy clay loam
Subsurface:
7 to 16 inches—dark brown sandy clay loam

Subsoil:
16 to 26 inches—dark brown clay
26 to 37 inches—brown clay
37 to 49 inches—brown clay
49 to 56 inches—reddish brown clay
56 to 80 inches—strong brown clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet

Flooding: None
Runoff: Low
Permeability: Moderately slow
Available water capacity: High
Root zone: Very deep
Salinity: None
Shrink swell potential: Moderate
Water erosion hazard: Slight

Composition

Luckenbach soil and similar inclusions: 10 to 15 percent
Contrasting inclusions: 85 to 90 percent

Contrasting Inclusions

- The Branyon soils have clayey textures throughout and are in slightly lower positions.
- The Gholson soils have sandy surface layers and are on similar positions.
- The Sunev soils have calcareous reaction throughout and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

The Luckenbach soil is not limited for pasture.

Cropland

The Luckenbach soil in not limited for cropland.

Rangeland

The Luckenbach soil is not limited for rangeland.

Wildlife habitat

The Luckenbach soil is not limited for openland and rangeland wildlife habitat

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The shrink-swell potential and clayey texture restrict the use for specific urban development.

Recreation

The Luckenbach soil is not limited for recreational development.

Waste management

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderately slow permeability restricts the application of waste materials.

- The surface texture restricts the treatment of wastewater by overland flow and by rapid infiltration.

Interpretive Groups

Land capability classification: 1
Ecological site: Clay Loam PE 44-64

LkB—Luckenbach sandy clay loam, 1 to 3 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 350 acres
Native vegetation: Post oak; Arizona cottontop, brownseed paspalum, little bluestem, sideoats grama, switchgrass, and plains bristlegrass

Typical Profile

Surface layer:
0 to 12 inches—very dark grayish brown sandy clay loam

Subsoil:
12 to 19 inches—brown clay loam
19 to 26 inches—reddish brown clay loam
26 to 33 inches—brown clay
33 to 44 inches—reddish brown clay
44 to 80 inches—strong brown clay

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Moderately slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink swell potential: Moderate
Water erosion hazard: Moderate

Composition

Luckenbach soil and similar inclusions: 10 to 15 percent
Contrasting inclusions: 85 to 90 percent

Contrasting Inclusions

- The Branyon soils have clayey textures throughout and are in lower positions.
- The Gholson soils have sandy surface layers and are on similar positions.
- The Sunev soils have calcareous reaction throughout and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts plant growth.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts crop growth and yields.
- The susceptibility of this soil to the effects of erosion require special consideration when used for cropland.

Rangeland

The Luckenbach soil is not limited for rangeland.

Wildlife habitat

The Luckenbach soil is not limited for openland and rangeland wildlife habitat

Urban development

Major limitations:

- The low strength restricts the use for local roads and streets.

Minor limitations:

- The shrink-swell potential and clayey texture restrict the use for specific urban development.

Recreation

The Luckenbach soil is not limited for recreational development.

Waste management

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderately slow permeability restricts the use for application of waste materials.
- The surface texture restricts the use for treatment of wastewater by overland flow and by rapid infiltration.

Interpretive Groups

Land capability classification: 2e
Ecological site: Clay Loam PE 44-64

LuB—Luling clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with plain to convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 300 acres
Native vegetation: Mesquite and hackberry; little bluestem, Indiangrass, twoflower trichloris, bristlegrass, sideoats grama, and Texas wintergrass

Typical Profile

Surface layer:
0 to 5 inches—grayish brown clay

Subsurface layer:
5 to 14 inches—grayish brown clay

Subsoil:
14 to 20 inches—brown clay
20 to 42 inches—grayish brown clay
42 to 53 inches—light olive brown clay
53 to 63 inches—light yellowish brown clay

Underlying material:
63 to 80 inches—yellow shale with clay texture

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink swell potential: Very high
Water erosion hazard: Moderate

Composition

Luling soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Crockett soils have loamy surface layers and are on similar positions.
- The Dreyer soils are calcareous and are on higher positions.
- The Normangee soils have loamy surface layers and are on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and cropland (fig. 10)

Figure 10.—Corn on an area of Luling clay, 1 to 3 percent slopes.

Management Concerns

Pasture

Major limitations:

- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Luling soil is not limited for rangeland.

Wildlife habitat

The Luling soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The very high shrink-swell potential and low strength severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.
- The clayey texture restricts the use for lawns and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and clayey texture restrict the use for recreational development.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 2e
Ecological site: Blackland PE 44-64

LuC—Luling clay, 3 to 5 percent slopes

Setting

Landform: Uplands
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Gently sloping with plain to convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 200 acres
Native vegetation: Post oak; Arizona cottontop, brownseed paspalum, little bluestem, sideoats grama, switchgrass, and plains bristlegrass

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown clay

Subsoil:
9 to 21 inches—dark grayish brown clay
21 to 43 inches—dark grayish brown clay
43 to 51 inches—light olive brown clay

Underlying material:
51 to 55 inches—light olive brown and yellowish brown shale with clay texture
55 to 80 inches—light gray shale with clay texture

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None

Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Luling soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Crockett soils have loamy surface layers and are on similar positions.
- The Dreyer soils are calcareous and are on higher positions.
- The Normangee soils have loamy surface layers and are on similar positions

Land Uses

Major land use: Pasture
Other land uses: Rangeland, cropland, wildlife habitat, and urban development

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The moderate available water capacity restricts plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.

Rangeland

The Luling soil is not limited for rangeland.

Wildlife habitat

The Luling soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The very high shrink-swell potential, clayey texture, and low strength restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and clayey texture restricts the use for recreational development.
- The slope restricts the use for recreational development.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Blackland PE 44-64

LuC2—Luling clay, 2 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with plain to convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 150 acres
Native vegetation: Post oak; Arizona cottontop, brownseed paspalum, little bluestem, sideoats grama, switchgrass, and plains bristlegrass

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown clay

Subsoil:
3 to 51 inches—dark grayish brown clay

Underlying material:
51 to 60 inches—olive yellow clay
60 to 80 inches—light brownish gray clay

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow

Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink swell potential: Very high
Water erosion hazard: Moderate

Composition

Luling soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Crockett soils have loamy surface layer and are on similar positions.
- The Dreyer soils are calcareous and are on higher positions.
- The Normangee soils have loamy surface layers and are on similar positions

Land Uses

Major land use: Cropland
Other land uses: Rangeland and pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- Because of erosion, 25 to 75 percent of the original topsoil has been removed, special consideration is required to maintain productivity when used for pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- Because of erosion, 25 to 75 percent of the original topsoil has been removed, special consideration is required to maintain productivity when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- Because of the erosion, a significant portion of the original topsoil has been removed, special grazing management is required to maintain productivity when used as rangeland.

Wildlife habitat

The Luling soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The very high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and clayey texture restrict the use for recreational development.
- The slope restricts the use for recreational development.

Waste management

Major limitations:
- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- The slope and very high runoff restrict the use for waste management.

Interpretive Groups

Land capability classification: 4e
Ecological site: Blackland PE 44-64

MaA—Mabank fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Nearly level with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Elm, hackberry, mesquite, and honey locust; little bluestem, Indiangrass, switchgrass, and gramas

Typical Profile

Surface layer:
0 to 7 inches—light brownish gray fine sandy loam

Subsoil:
7 to 18 inches—very dark gray clay
18 to 29 inches—dark gray clay
29 to 57 inches—gray clay
57 to 80 inches—light gray clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink swell potential: High
Water erosion hazard: Slight

Composition

Mabank soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Burleson soils have clayey surface layers and are on slightly higher positions.
- The Wilson soils have loamy surface layers and are on slightly higher positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

The Mabank soil is not limited for rangeland.

Wildlife habitat

The Mabank soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration for urban development.

Recreation

Major limitations:
- The very slow permeability restricts the use for recreational development.

Waste management

Major limitations:
- The very slow permeability and surface texture of this soil hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3w
Ecological site: Claypan Prairie PE 44-64

MeA—Meguin silty clay loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flat plain
Slope: Nearly level with plane surfaces
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Pecan and elm; little bluestem, big bluestem, switchgrass, Indiangrass, Texas wintergrass, and wildrye

Typical Profile

Surface layer:
0 to 8 inches—very dark gray silty clay loam

Subsurface layer:
8 to 16 inches—dark gray silty clay loam

Subsoil:
16 to 29 inches—brown silt clay loam
29 to 52 inches—pale brown silt loam
52 to 80 inches—light yellowish brown silt loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: Occasional for brief duration from June to September
Runoff: Negligible
Permeability: Moderate
Available water capacity: High
Root zone: Very deep

Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Meguin soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Branyon soils are clayey and are on low terrace positions.
- The Buchel soils are clayey and are on similar positions.
- The Degola soils are loamy and are on slightly higher positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland and rangeland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- Occasional flooding during the growing season restricts seedbed preparation for most grasses.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- Occasional flooding during the growing season restricts seedbed preparation for most crops.

Rangeland

The Meguin soil is not limited for rangeland.

Wildlife habitat

The Meguin soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- Occasional flooding severely restricts the use for urban development.

Recreation

Major limitations:
- Occasional flooding severely restricts the use for camp areas.

Minor limitations:
- Occasional flooding severely restricts the use for playgrounds and golf fairways.

Waste management

Major limitations:

- Occasional flooding severely restricts application and treatment of waste materials.

Interpretive Groups

Land capability classification: 2w
Ecological site: Loamy Bottomland PE 31-44

MfA—Meguin silty clay loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flats
Slope: Nearly level with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 150 acres
Native vegetation: Pecan and elm; little bluestem, big bluestem, switchgrass, Indiangrass, Texas wintergrass, and wildrye

Typical Profile

Surface layer:
0 to 13 inches—dark brown silty clay loam

Subsoil:
13 to 24 inches—dark brown silty clay loam
24 to 38 inches—pale brown silt loam
38 to 57 inches—brown silty clay loam
57 to 80 inches—brown silt loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet.
Flooding: Frequent for a brief duration from June to September
Runoff: Negligible
Permeability: Moderate
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Meguin soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Buchel soils are clayey and are on similar positions.
- Soils similar to Meguin but wetter with grayer subsoils and in lower and depressed positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- Frequent flooding severely restricts seedbed preparation and plant growth.

Cropland

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.

Rangeland

This soil is not limited for rangeland

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- Frequent flooding restricts grain and seed crops and desirable grasses and legumes that are food for openland wildlife habitat.

Urban development

Major limitations:
- Frequent flooding severely restricts the use for urban development.

Recreation

Major limitations:
- Frequent flooding severely restricts the use for playgrounds and camp areas.

Minor limitations:
- The hazard of frequent flooding requires special consideration when these areas are used for picnic areas or trails.

Waste management

Major limitations:
- Frequent flooding severely restricts this soil for the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 5w
Ecological site: Loamy Bottomland PE 31-44

MoB—Monteola clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Very gently sloping
Shape of areas: Irregular

Size of areas: 15 to 100 acres
Native vegetation: Mesquite and spiny hackberry; buffalograss, curlymesquite, and alkali sacaton; catclaw and agarito

Typical Profile

Surface layer:
0 to 14 inches—very dark gray clay

Subsoil:
14 to 41 inches—very dark gray to dark gray clay
41 to 56 inches—grayish brown clay
56 to 70 inches—light brownish gray clay

Underlying material:
70 to 80 inches—very pale brown clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Very slight
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Monteola soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Coy soils have loamy surface layers and are on similar positions.
- The Schattel soils have loamy surface layers and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slight salinity may restrict plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:

- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slight salinity may restrict crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Monteola soil is not limited for rangeland.

Wildlife habitat

The Monteola soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The very high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitation:

- The clayey texture restricts the use for golf fairways.

Minor limitations:

- The very gently sloping terrain, very slow permeability, and clayey texture require special consideration when constructing recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material.

Interpretive Groups

Land capability classification: 2e
Ecological site: Blackland PE 31-44

MoC—Monteola clay, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: Gilgai
Landscape position: Backslopes and footslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Mesquite and spiny hackberry; buffalograss, curlymesquite, and alkali sacaton; catclaw and agarito

Typical Profile

Surface layer:
0 to 7 inches—very dark gray clay

Subsoil:
7 to 27 inches—very dark gray clay
27 to 39 inches—brown clay
39 to 51 inches—yellowish brown clay
51 to 70 inches—brownish yellow clay

Underlying material:
70 to 80 inches—light gray clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Very slight
Shrink-swell potential: Very high
Water erosion hazard: Moderate

Composition

Monteola soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Coy soils have loamy surfaces and are on similar positions.
- The Schattel soils have loamy surface layers and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slight salinity may restrict plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slight salinity may restrict crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Monteola soil is not limited for rangeland.

Wildlife habitat

The Monteola soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The very high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The clayey texture restricts the use for golf fairways.

Minor limitations:

- The gently sloping terrain, very slow permeability, and clayey texture require special consideration when constructing recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Blackland PE 31-44

NaA—Navasota clay, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: Low depressions
Landscape position: Flats and lows
Slope: Nearly level with concave surfaces
Shape of areas: Oblong next to drainage
Size of areas: 10 to 150 acres
Native vegetation: Dwarf palmetto, cedar, elm, black willow, willow oak, and water oak

Typical Profile

Surface layer:
0 to 7 inches—grayish brown clay

Subsoil:
7 to 25 inches—gray to dark gray clay
25 to 55 inches—black clay
55 to 80 inches—black clay

Soil Properties

Depth: Very deep
Drainage class: Somewhat poorly drained
Water table: A perched water occurs within 1 foot of the surface from October to May
Flooding: Frequent for very long duration from October to May
Ponding: From the surface to 0.1 foot above the surface during January
Runoff: Negligible
Permeability: Very slow
Available water capacity: Very high
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Slight

Composition

Navasota soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Bosque soils are loamy throughout and are on well drained mounds.
- The Tinn soils are calcareous and are on slightly higher positions.
- Soils that have an organic surface layer and are in lower positions.

Land Uses

Major land use: Wildlife habitat
Other land uses: Rangeland

Management Concerns

Pasture

Major limitations:
- Ponding for long periods during the growing season severely restricts seedbed preparation, seedling emergence, and plant growth.
- Frequent flooding severely restricts seedbed preparation and plant growth.

Cropland

Major limitations:
- Ponding for long periods during the growing season severely restricts seedbed preparation, seedling emergence, and crop growth.
- Frequent flooding severely restricts seedbed preparation and crop growth.

Rangeland

Major limitations:
- Ponding for long periods during the growing season severely restricts plant growth.

Wildlife habitat

Major limitations:
- There are no major limitations.

Minor limitations:
- Ponding for long periods during the growing season severely restricts plant growth for rangeland wildlife habitat.
- Frequent flooding restricts desirable plant growth for food sources.

Urban development

Major limitations:

- Ponding for long periods severely restricts the use for urban development.
- Frequent flooding severely restricts the use for urban development.
- The very high shrink-swell potential in the surface horizon severely restricts the use for urban development.
- The soil wetness and low strength restricts the use for urban development.

Recreation

Major limitations:

- Ponding for long periods severely restricts the use for recreational development.
- The hazard of frequent flooding severely restricts the use for playgrounds and camp areas.
- The soil wetness, clayey texture, and very slow permeability restrict the use for recreational development.

Waste management

Major limitations:

- Ponding for long periods severely restricts this soil for the application and treatment of waste materials.
- Frequently flooding and very slow permeability severely restrict the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 6w
Ecological site: Clayey Bottomland PE 44-64

NmB—Normangee sandy clay loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Post oak; little bluestem, big bluestem, Indiangrass, switchgrass, and gramas

Typical Profile

Surface layer:
0 to 6 inches—yellowish brown sandy clay loam

Subsoil:
6 to 18 inches—brown clay
18 to 53 inches—brownish yellow clay

Underlying material:
53 to 80 inches—yellowish brown shale with clay texture

Soil Properties

Depth: Deep
Drainage class: Moderately well drained

Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Normangee soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Crockett soils have fine sandy loam surface layers and are on similar positions.
- The Dreyer soils are clayey throughout and on higher positions.
- The Kurten soils have fine sandy loam surface layers and are on similar positions.
- The Luling soils are clayey throughout and on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and cropland

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Rangeland

The Normangee soil is not limited for rangeland.

Wildlife habitat

The Normangee soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very slow permeability and slope restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material.

Minor limitations:

- The slight salinity may restrict the treatment of wastewater by overland flow.

Interpretive Groups

Land capability classification: 3e
Ecological site: Claypan Prairie PE 44-64

NmC—Normangee sandy clay loam, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Gently sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Post oak; little bluestem, big bluestem, Indiangrass, switchgrass, and gramas

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown sandy clay loam

Subsoil:
6 to 14 inches—brown clay
14 to 53 inches—yellowish brown clay

Underlying material:
53 to 80 inches—dark yellowish brown shale with clay texture

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet

Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Normangee soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Crockett soils have fine sandy loam surface layers and are on similar positions.
- The Dreyer soils are clayey throughout and on higher positions.
- The Kurten soils have fine sandy loam surface layers and are on similar positions.
- The Luling soils are clayey throughout and on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil and surface crust restricts root penetration which limits growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Rangeland

The Normangee soil is not limited for rangeland.

Wildlife habitat

The Normangee soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very slow permeability and slope restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material.

Minor limitations:

- The slight salinity may restrict the treatment of wastewater by overland flow.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Prairie PE 44-64

NuC—Nusil loamy fine sand, 0 to 5 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Nearly level and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 125 acres
Native vegetation: Live oak and mesquite; little bluestem, brownseed paspalum, Indiangrass, switchgrass, tanglehead, fringeleaf paspalum, and hooded windmillgrass; pricklypear and catclaw acacia

Typical Profile

Surface layer:
0 to 24 inches—grayish brown loamy fine sand

Subsurface layer:
24 to 35 inches—very pale brown loamy fine sand

Subsoil:
35 to 49 inches—grayish brown sandy clay loam
49 to 70 inches—light brownish gray sandy clay loam
70 to 80 inches—light gray sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Slow
Available water capacity: Low
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Moderate

Composition

Nusil soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Leming soils have clayey subsoils and are in lower positions.
- The Papalote soils have sandy surface layers less than 20 inches thick and are in lower positions.
- The Rhymes soils have sandy surface layers more than 40 inches thick and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The low available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The low available water capacity restricts crop growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Nusil soil is not limited for rangeland.

Wildlife habitat

The Nusil soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The potential for sloughing severely restricts shallow excavations.

Minor limitations:

- The droughty condition restricts the use for lawns and landscaping.

Recreation

Major limitations:

- The sandy texture severely restricts the use for recreational development.

Minor limitations:

- The droughty condition restricts the use for golf fairways.

Waste management

Major limitations:

- The slow permeability and sandy surface texture restricts the waste application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Sandy PE 25-44

PaC—Padina loamy fine sand, 0 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Nearly level to gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Post oak, blackjack oak, bluejack oak, and hickory; greenbrier, yaupon, and American beautyberry; little bluestem, purpletop tridens, sand lovegrass, low paspalums, and low panicums

Typical Profile

Surface layer:
0 to 15 inches—pale brown loamy fine sand

Subsurface layer:
15 to 49 inches—very pale brown loamy fine sand

Subsoil:
49 to 59 inches—brownish yellow sandy clay loam
59 to 80 inches—very pale brown sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None

Runoff: Low
Permeability: Moderate
Available water capacity: Low
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Moderate

Composition

Padina soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Arenosa soils have sandy surface layers greater than 80 inches thick and are on higher positions.
- The Rosanky soils have subsoils within 20 inches of the surface and are on similar positions.
- The Silstid soils have sandy surface layers less than 40 inches thick and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Cropland and pasture

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity severely restricts plant growth.

Wildlife habitat

The Padina soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The potential for sloughing severely restricts the use for shallow excavations.

Minor limitations:
- The droughty condition restricts the use for lawns and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The sandy surface layer requires special consideration in order to maintain a vegetative cover on these areas for recreational uses.
- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:
- The low water holding capacity and droughty condition hinders plant growth and restricts the application of waste material.
- The surface texture and moderate permeability restricts treatment of wastewater by overland flow and rapid infiltration
- The sandy or loamy subsoil restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Minor limitations:
- The acid soil reaction and droughty condition restrict the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Deep Sand PE 48-68

PbA—Papalote loamy fine sand, 0 to 1 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Footslopes and toeslopes
Slope: Nearly level with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Live oak, post oak, mesquite, huisache, and spiny hackberry; little bluestem, feathery bluestem, Nash windmillgrass, and hooded windmillgrass; pricklypear

Typical Profile

Surface layer:
0 to 14 inches—grayish brown loamy fine sand

Subsoil:
14 to 26 inches—grayish brown sandy clay
26 to 39 inches—light brown sandy clay

39 to 52 inches—light yellowish brown sandy clay loam
52 to 80 inches—very pale brown sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Papalote soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Leming soils have sandy surface layers more than 20 inches thick and are on similar positions.
- The Nusil soils have sandy surface layers more than 20 inches thick and are on higher positions.
- The Weesatche soils are loamy and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

The Papalote soil is not limited for rangeland.

Wildlife habitat

The Papalote soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The moderate shrink-swell potential and low strength restrict small commercial buildings, and local roads and streets.

Recreation

The Papalote soil is not limited for recreational development.

Waste management

Major limitations:

- The slow permeability and surface texture of this soil hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Loamy Sand PE 19-31

PbB—Papalote fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 85 acres
Native vegetation: Live oak, post oak, mesquite, huisache, and spiny hackberry; little bluestem, feathery bluestem, Nash windmillgrass, and hooded windmillgrass; pricklypear

Typical Profile

Surface layer:
0 to 7 inches—dark brown fine sandy loam

Subsoil:
7 to 22 inches—dark grayish brown clay
22 to 37 inches—grayish brown sandy clay
37 to 49 inches—light brown sandy clay loam
49 to 55 inches—pink sandy clay loam

Underlying material:
55 to 80 inches—pink sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderate well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: High
Root zone: Very deep

Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Moderate

Composition

Papalote soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Weesatche soils are loamy and are on higher positions.

Land Uses

Major land use: Range
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

The Papalote soil is not limited for rangeland.

Wildlife habitat

The Papalote soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey texture and moderate shrink-swell potential restrict the use for urban development.

Recreation

The Papalote soil is not limited for recreational development.

Waste management

Major limitations:

- There are no major limitations.

Minor limitations:

- The slow permeability and surface texture hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 2e
Ecological site: Tight Sandy Loam PE 31-44

PkB—Pavelek clay, 0 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Nearly level and very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Live oak, mesquite, and spiny hackberry; Texas wintergrass, sideoats grama, bristlegrasses, silver bluestem, buffalograss, threeawn, and forbs; agarito, pricklypear, lotebush, and blackbrush

Typical Profile

Surface layer:
0 to 11 inches—very dark gray clay

Subsoil:
11 to 17 inches—dark gray gravelly clay loam
17 to 25 inches—very pale brown strongly cemented caliche

Underlying material:
25 to 80 inches—very pale brown noncalcareous siltstone of silt loam texture

Soil Properties

Depth: Shallow
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Very low
Root zone: Shallow
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Pavelek soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Ecleto soils have loamy surface layers and are on similar positions.
- The Eloso soils are moderately deep and are in lower positions.

Land Uses

Major land use: Range
Other land uses: Wildlife habitat

Management Concerns

Pasture

Major limitations:
- The shallow depth to caliche severely restricts plant root penetration, growth, and yields.
- The very low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- The shallow depth to caliche severely restricts crop root penetration, growth, and yields.
- The very low available water capacity severely restricts crop growth and yields.

Minor limitations:
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

Major limitations:
- The shallow depth to caliche severely restricts plant root penetration and plant growth.

Minor limitations:
- The very low available water capacity severely restricts plant growth.

Wildlife habitat

The Pavelek soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- A cemented pan within 20 inches severely restricts the use for shallow excavations, and dwellings with basements.
- The high shrink-swell potential in the surface horizon severely restricts the use for urban development.

Minor limitations:
- A cemented pan within 20 inches requires special consideration when constructing roads, small commercial buildings, and dwellings without basements.

Recreation

Major limitations:
- The cemented pan restricts the use for camp areas, picnic areas, and playgrounds.

Minor limitations:
- The clayey texture restricts the use for paths, trails, and golf fairways.

Waste management

Major limitations:
- This soil depth of less than 20 inches severely restricts the application and treatment of waste material because of the potential for groundwater contamination.
- The slow permeability may promote wet conditions and hinder the application of waste material.
- The cemented pan restricts the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 3e
Ecological site: Shallow PE 31-44

RhC—Rhymes fine sand, 0 to 5 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Nearly level to gently sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Live oak and mesquite; little bluestem, brownseed paspalum, Indiangrass, switchgrass, tanglehead, fringeleaf paspalum, and hooded windmillgrass; pricklypear

Typical Profile

Surface layer:
0 to 25 inches—yellowish brown fine sand

Subsurface layer:
25 to 48 inches—very pale brown fine sand

Subsoil:
48 to 69 inches—light yellowish brown sandy clay loam
69 to 80 inches—light gray sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Somewhat excessively drained
Water table: None within a depth of 6 feet

Flooding: None
Runoff: Very low
Permeability: Moderately slow
Available water capacity: Low
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Rhymes soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Leming soils have sandy surface layers less than 40 inches thick and are on similar positions.
- The Nusil soils have sandy surface layers less than 40 inches thick and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.

Minor limitations:
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity severely restricts plant growth.

Wildlife habitat

The Rhymes soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low available water capacity severely restricts the use for lawns, landscaping, and golf fairways.
- The sandy texture throughout severely restricts the use for shallow excavations.

Recreation

Major limitations:

- The sandy surface layer severely restricts the use for recreational development.

Waste management

Major limitations:

- The sandy surface texture and moderate permeability restrict treatment of wastewater by overland flow and rapid infiltration.

Minor limitations:

- The low available water capacity severely restricts the application of manure, food processing, municipal sludge, and the disposal of wastewater by irrigation.
- The moderate permeability of the soil severely restricts the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 6e
Ecological site: Sandy PE 25-44

RoB—Rosanky fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Post oak, blackjack oak, cedar, and yaupon; little bluestem, annual grasses, and weeds

Typical Profile

Surface layer:
0 to 8 inches—brown fine sandy loam

Subsurface layer:
8 to 12 inches—pale brown fine sandy loam

Subsoil:
12 to 27 inches—red clay
27 to 51 inches—red clay loam
51 to 57 inches—reddish yellow clay loam

Underlying material:
57 to 70 inches—yellow sandy clay loam
70 to 80 inches—light brownish gray weakly cemented sandstone

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None

Runoff: Medium
Permeability: Moderately slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Rosanky soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Edge soils have higher base saturation and are on similar positions.
- The Jedd soils are moderately deep and on higher positions.
- The Silstid soils have sandy surface layers more than 20 inches thick and are on slightly lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Cropland, pasture, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The dense clayey subsoil limits plant root penetration which restricts growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

The Rosanky soil is not limited for rangeland.

Wildlife habitat

The Rosanky soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The clayey texture and moderate shrink-swell potential restrict the use for shallow excavations, dwellings without basements, and small commercial buildings.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope and small stones restrict the use for playgrounds.

Waste management

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate slow permeability and surface texture restrict the treatment of wastewater by overland flow and rapid infiltration.
- The moderately slow permeability restricts the application of waste materials.

Interpretive Groups

Land capability classification: 2e
Ecological site: Sandy Loam PE 48-68

RoC2—Rosanky fine sandy loam, 3 to 5 percent slopes, eroded

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 25 to 100 acres
Native vegetation: Post oak, blackjack oak, cedar, and yaupon; little bluestem, annual grasses, and weeds

Typical Profile

Surface layer:
0 to 3 inches—brown fine sandy loam

Subsoil:
3 to 18 inches—red clay
18 to 29 inches—red clay
29 to 46 inches—red clay loam

Underlying material:
46 to 60 inches—yellowish brown sandy clay loam
60 to 80 inches—very pale brown sandstone

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None

Runoff: Medium
Permeability: Moderately slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Severe

Composition

Rosanky soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Edge soils have higher base saturation in the subsoil and are on similar positions.
- The Jedd soils are moderately deep and are on higher positions.
- The Silstid soils have sandy surface layers greater than 20 inches thick and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- Because of erosion, 25 to 75 percent of the original topsoil has been removed, special consideration is required to maintain productivity when used as pasture.

Cropland

Major limitations:
- The susceptibility of this soil by erosion severely restricts the use for cropland.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The hazard of erosion on slopes that range from 3 to 5 percent requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.
- Because of erosion, 25 to 75 percent of the original topsoil has been removed, special consideration is required to maintain productivity when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- Because of erosion, a significant portion of the original topsoil has been removed, special grazing management is required to maintain productivity when used as rangeland.

Wildlife habitat

The Rosanky soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The low strength restricts the use for local roads and streets.

Minor limitations:
- The clayey texture and shrink-swell potential restrict the use for shallow excavations, dwellings without basements, and small commercial buildings.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope and small stones restrict the use for playgrounds.

Waste management

Major limitations:
- The moderately slow permeability and surface texture restrict the use for treatment of wastewater by overland flow and rapid infiltration.

Minor limitations:
- The moderately slow permeability restricts the use for application of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Sandy Loam PE 48-68

RsB—Rosenbrock clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Footslopes and toeslopes
Slope: Very gently sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Mesquite, spiny hackberry, and live oak; Texas wintergrass, sideoats grama, bristlegrass, Texas grama, threeawn, and red grama; agarito, pricklypear, and lotebush

Typical Profile

Surface layer:
0 to 8 inches—very dark gray clay

Subsoil:
8 to 28 inches—very dark gray clay
28 to 40 inches—grayish brown clay
40 to 59 inches—pale brown clay

Underlying material:
59 to 80 inches—very pale brown weakly cemented tuffaceous siltstone with silt loam texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: High
Root zone: Deep
Salinity: Very slight
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Rosenbrock soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Bryde soils have loamy surfaces and are on similar positions.
- The Degola soils are loamy throughout and are on flood plains.
- The Eloso soils are moderately deep and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture, cropland, and wildlife habitat

Management Concerns

Pasture

The Rosenbrock soil is not limited for pastureland.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Rangeland

The Rosenbrock soil is not limited for rangeland.

Wildlife habitat

The Rosenbrock soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential, low strength, and clayey texture severely restrict the use for urban development.

Minor limitations:

- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:

- The clayey texture restricts the use for golf fairways.

Minor limitations:

- The clayey surface layer, very slow permeability, and slope restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability severely restricts the application of waste materials.

Interpretive Groups

Land capability classification: 2e
Ecological site: Rolling Blackland PE 31-44

RvA—Rutersville loamy fine sand, 0 to 1 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Footslopes and toeslopes
Slope: Nearly level and very gently sloping with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 50 to 250 acres
Native vegetation: Post oak, blackjack oak, red cedar, and yaupon; rosinweed, greenbriar, threeawn, paspalum, bristlegrass, foxtail, purpletop tridens, and little bluestem

Typical Profile

Surface layer:
0 to 12 inches—brown loamy fine sand

Subsoil:
12 to 20 inches—grayish brown sandy clay loam
20 to 30 inches—brown sandy clay loam
30 to 46 inches—very pale brown sandy clay loam
46 to 58 inches—very pale brown fine sandy loam

Underlying material:
58 to 80 inches—pale yellow weakly cemented sandstone with fine sandy loam texture

Soil Properties

Depth: Deep
Drainage class: Moderately well drained
Water table: A perched water table occurs at a depth of 2.5 feet to 5 feet during December to April
Flooding: None
Runoff: Medium
Permeability: Slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Slight

Composition

Rutersville soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Arol soils are moderately deep and are on slightly higher positions.
- The Cadell soils are deep with fine sandy loam surfaces and are on higher positions.
- The Shiro soils are moderately deep and are on higher positions.
- The Singleton soils have fine sandy loam surfaces and are on higher positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland, rangeland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.
- The dense subsoil limits plant root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

The Rutersville soil is not limited for rangeland.

Wildlife habitat

The Rutersville soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The high shrink-swell potential and low strength restrict the use for urban development.

Recreation

The Rutersville soil is not limited for recreational development.

Waste management

Major limitations:

- The slow permeability may promote wet conditions and hinder the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 2w
Ecological site: Claypan Savannah PE 48-68

SaD—Sarnosa fine sandy loam, 5 to 8 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Shoulder and backslopes
Slope: Moderately sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Mesquite and huisache; little bluestem, sideoats grama, Texas wintergrass, curlymesquite, and silver bluestem; pricklypear

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown fine sandy loam

Subsoil:
10 to 19 inches—brown fine sandy loam
19 to 63 inches—very pale brown fine sandy loam

Underlying material:
63 to 80 inches—very pale brown weakly cemented sandstone with fine sandy loam texture

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium

Permeability: Moderate
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Moderate

Composition

Sarnosa soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Coy soils have clayey subsoils and are in lower positions.
- The Weesatche soils have sandy clay loam subsoils and are in lower positions.
- Soils similar to Sarnosa that have more than 15 percent clay throughout and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The high alkaline condition restricts certain grasses growth and yields.

Cropland

Major limitations:
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.
- The high alkaline condition restricts certain crops growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The high alkaline condition restricts certain plant growth.

Wildlife habitat

The Sarnosa soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope restricts the use for small commercial buildings.

Recreation

Major limitations:
- Slopes greater than 6 percent severely restrict the use for playgrounds.

Waste management

Major limitations:

- The surface texture and moderate permeability restrict the treatment of wastewater by overland flow and rapid infiltration.

Minor limitations:

- Slopes greater than 7 percent severely restrict the application and treatment of waste materials.

Interpretive Groups

Land capability classification: 4e
Ecological site: Gray Sandy Loam PE 19-31

ScC—Schattel clay loam, 2 to 5 percent slopes, nonsaline

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Summits, shoulders and backslopes
Slope: Very gently sloping and gently sloping
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Pink pappusgrass, Plain's bristlegrass, fourflower trichloris, and fourwing saltbush; blackbrush, condalias, twisted acacia, cenizo, pricklypear, guayacan, and desert yaupon

Typical Profile

Surface layer:
0 to 6 inches—grayish brown clay loam

Subsoil:
6 to 25 inches—pale brown clay
25 to 52 inches—very pale brown clay

Underlying material:
52 to 80 inches—pink weathered shale that has clay texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Slight
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Schattel soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Coy soils are in lower positions.
- The Monteola soils are clayey throughout and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.
- The moderate available water capacity restricts plant growth.

Cropland

Major limitations:
- The susceptibility of this soil to moderate erosion and high runoff severely restrict the use for cropland.

Minor limitations
- The moderate available water capacity restricts crop growth and yields.

Rangeland

The Schattel soil is not limited for rangeland.

Wildlife habitat

The Schattel soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength severely restrict the use for dwellings and local roads and streets.

Minor limitations:
- The moderate available water capacity restricts lawns, landscaping, and golf fairways.
- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The slope and droughty condition restricts the use for playgrounds and golf fairways.

Waste management

Major limitations:
- The slow permeability severely restricts the disposal of wastewater by the overland flow process.

- The slow permeability severely restricts the disposal of wastewater by rapid infiltration.

Minor limitations:

- The slope restricts the disposal of wastewater by rapid infiltration, irrigation, or the slow rate process.

Interpretive Groups

Land capability classification: 4e
Ecological site: Sloping Clay Loam PE 31-44

ShC—Shalba fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Shoulders and backslopes
Slope: Very gently sloping and gently sloping
Shape of areas: Rounded
Size of areas: 15 to 50 acres
Native vegetation: Post oak, blackjack oak, cedar, and yaupon; little bluestem, Indiangrass, purpletop tridens, and other grasses

Typical Profile

Surface layer:
0 to 5 inches—light brownish gray fine sandy loam

Subsoil:
5 to 18 inches—dark gray clay

Underlying material:
18 to 80 inches—pale yellow weakly cemented siltstone with clay texture

Soil Properties

Depth: Shallow
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Very low
Root zone: Shallow
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Shalba soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Arol soils are moderately deep and are in lower positions.
- The Burlewash soils are moderately deep and are on similar positions.
- The Shiro soils are moderately deep and are on slightly lower positions.
- The Singleton soils are moderately deep and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat

Management Concerns

Pasture

Major limitations:
- The very low available water capacity severely restricts plant growth and yields.
- The shallow depth to bedrock severely restricts plant root penetration, growth, and yields.

Minor limitations:
- The dense clayey subsoil restricts root penetration which limits growth and yields.
- When dry, the soil is droughty and forms a surface crust which limits growth and yields.

Cropland

Major limitations:
- The very low available water capacity severely restricts crop growth and yields.
- The very slow permeability can cause wet conditions that affect seedbed preparation, planting, and growth.
- The shallow depth to bedrock severely restricts plant root penetration, growth, and yield.

Minor limitations:
- The dense clayey subsoil restricts roots penetration which limits growth and yields.
- When dry, the soil is droughty and forms a surface crust which limits growth and yields.

Rangeland

Major limitations:
- The shallow depth to bedrock severely restricts the use for rangeland.

Minor limitations:
- The dense clayey subsoil restricts roots penetration which limits growth and yields.
- When dry, the soil is droughty and forms a surface crust which limits growth and yields.
- The very low available water capacity restricts the use for rangeland.

Wildlife habitat

Major limitations:
- The very low available water capacity severely restricts plant growth.
- The shallow depth to bedrock severely restricts root penetration and plant growth.

Urban development

Major limitations:
- The high shrink-swell potential in the subsoil horizons require special consideration when used for urban development.

Minor limitations:
- The shallow depth to bedrock restricts the use for urban development.

Recreation

Major limitations:
- The shallow depth to bedrock severely restricts the use for recreational development.

Waste management

Major limitations:
- This soil depth of less than 20 inches severely restricts the application and treatment of waste materials because of the potential for groundwater contamination.
- The very slow permeability may promote wet conditions and hinder the application of waste material.

Interpretive Groups

Land capability classification: 4s
Ecological site: Claypan Savannah PE 48-68

SnC—Shiner fine sandy loam, 3 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Summits, shoulders, and backslopes
Slope: Gently sloping with concave surfaces
Shape of areas: Irregular
Size of areas: 50 to 400 acres
Native vegetation: Mesquite and huisache; broomweed, ragweed, doveweed, bullnettle, silver bluestem, gramas, and common bermudagrass

Typical Profile

Surface layer:
0 to 8 inches—dark gray fine sandy loam

Subsoil:
8 to 16 inches—pale brown sandy clay loam

Underlying material:
16 to 60 inches—very pale brown sandstone with fine sandy loam texture

Soil Properties

Depth: Shallow
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: Very low
Root zone: Shallow
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Moderate

Composition

Shiner soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Carbengle soils are moderately deep and in lower positions.
- The Cuero soils are deep and in lower positions.
- The Sarnosa soils are deep and in lower positions.

Land Uses

Major land use: Range
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The very low available water capacity severely restricts plant growth and yields.
- The shallow depth to bedrock severely restricts root penetration, plant growth, and yields.

Cropland

Major limitations:
- The very low available water capacity severely restricts crop growth and yields.
- The shallow depth to bedrock severely restricts root penetration, growth, and yields.
- The shallow depth to bedrock severely restricts the use for cropland.

Rangeland

Major limitations:
- The shallow depth to bedrock severely restricts root penetration and plant growth.

Minor limitations:
- The very low available water capacity severely restricts plant growth.

Wildlife habitat

The Shiner soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The shallow depth to bedrock severely restricts the use for excavations, dwellings with basements, lawns, and landscaping.

Minor limitations:
- The very low available water capacity severely restricts the use for lawns and landscaping.

Recreation

Major limitations:
- The shallow depth to bedrock severely restricts the use for recreational development.

- The gently sloping terrain requires special consideration when constructing playgrounds.

Waste management

Major limitations:

- The shallow depth to bedrock severely restricts the application and treatment of waste material because of the potential for groundwater contamination.
- The very low water holding capacity and droughty condition hinders plant growth and restricts the application of waste material.
- The surface texture restricts the treatment of wastewater because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 4e
Ecological site: Chalky Ridge PE 44-64

SnE—Shiner fine sandy loam, 5 to 12 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Summits, shoulders and backslopes
Slope: Moderately sloping and strongly sloping
Shape of areas: Irregular
Size of areas: 50 to 400 acres
Native vegetation: Mesquite and huisache; broomweed, ragweed, doveweed, bullnettle, silver bluestem, gramas, and common bermudagrass

Typical Profile

Surface layer:
0 to 8 inches—light brownish gray fine sandy loam

Subsoil:
8 to 16 inches—very pale brown sandy clay loam

Underlying material:
16 to 35 inches—very pale brown weakly cemented sandstone with fine sandy loam texture
35 to 80 inches—very pale brown fine sandy loam

Soil Properties

Depth: Shallow
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Moderate
Available water capacity: Very low
Root zone: Shallow
Salinity: None
Shrink-swell potential: Low
Water erosion hazard: Severe

Composition

Shiner soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Carbengle soils are moderately deep and in lower positions.
- The Cuero soils are deep and in lower positions.
- The Sarnosa soils are deep and in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The very low available water capacity restricts plant growth and yields.
- The shallow soil severely restricts root penetration, plant growth, and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.

Cropland

Major limitations:
- The very low available water capacity severely restricts crop growth and yield.
- The shallow soil severely restricts root penetration, growth, and yield.
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The shallow soil restricts root penetration and plant growth.
- The very low available water capacity severely restricts plant growth.

Wildlife habitat

The Shiner soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The depth to rock severely restricts the use for shallow excavation or dwellings with basements.

Minor limitations:
- The depth to rock requires special consideration when constructing roads, small commercial buildings, or dwellings without basements.
- The strongly sloping terrain restricts the use for urban development.

Recreation

Major limitations:

- The strongly sloping terrain is a severe restriction to the construction of a playground.
- The depth to rock requires special consideration when constructing picnic and camp.

Waste management

Major limitations:

- The depth to rock severely restricts the application of waste material because of the potential for groundwater contamination.

Minor limitations:

- The hazard of surface runoff on slopes of 5 to 12 percent requires special consideration when applying waste material.
- The very low water holding capacity and droughty condition hinders plant growth and restricts the application of waste material.
- The surface texture restricts treatment of wastewater because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 6e
Ecological site: Chalky Ridge PE 44-64

SoC—Shiro loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 50 to 100 acres
Native vegetation: Post oak and blackjack oak; little bluestem, purpletop tridens, brownseed paspalum, Indiangrass, low panicums, shrubs, and forbs

Typical Profile

Surface layer:
0 to 3 inches—pale brown loamy fine sand

Subsurface layer:
3 to 8 inches—very pale brown loamy fine sand

Subsoil:
8 to 12 inches—reddish brown clay
12 to 34 inches—light gray clay

Underlying material:
34 to 80 inches—very pale brown weakly cemented sandstone with sandy clay loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Well drained

Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: None
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Shiro soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Burlewash soils have base saturation less than 75 percent in the subsoil and are on similar positions.
- The Cadell soils are deep and in lower positions.
- The Singleton soils have fine sandy loam surface layers and are on similar positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat

Management Concerns

Pasture

Major limitations:
- The low available water capacity severely restricts plant growth and yields.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- The low available water capacity severely restricts crop growth and yields.

Minor limitations:
- The slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity severely restricts plant growth.

- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Wildlife habitat

The Shiro soil is not limited for openland and woodland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration for urban development.

Minor limitations:
- The soil texture, depth, and droughty condition restrict the use for urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The gently sloping terrain, depth, and droughty condition require special consideration when constructing playgrounds and golf fairways.

Waste management

Major limitations:
- There are no major limitations.

Minor limitations:
- The slow permeability, depth, and surface texture of this soil hinder the application and treatment of waste materials.
- The soil depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.
- The low water holding capacity and droughty condition hinders plant growth and restricts the application of waste material.

Interpretive Groups

Land capability classification: 3e
Ecological site: Sandy Loam PE 48-68

SsC—Silstid loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Blackjack oak, post oak and yaupon; mid and tall grasses

Typical Profile

Surface layer:
0 to 26 inches—brown loamy fine sand

Subsurface layer:
26 to 30 inches—light yellowish brown loamy fine sand

Subsoil:
30 to 47 inches—brownish yellow sandy clay loam
47 to 54 inches—yellow sandy clay loam
54 to 80 inches—mottled yellow, brownish yellow, and red sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Moderate

Composition

Silstid soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Alum soils have clayey subsoils and are on similar positions.
- The Padina soils have sandy surfaces greater than 40 inches thick and are on higher positions.
- The Rosanky soils have loamy surface layers and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The moderate available water capacity restricts plant growth and yields.

Cropland (fig.11)

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.

Figure 11.—Coastal bermudagrass on an area of Silstid loamy fine sand, 1 to 5 percent slopes.

- The moderate available water capacity restricts crop growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Silstid soil is not limited for rangeland wildlife habitat.

Urban development

Major limitations:

- The potential for sloughing severely restricts the use for shallow excavations.

Minor limitations:

- The droughty condition restricts the use for lawns and landscaping.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The sandy texture, slope, and droughty condition require special consideration and restrict the use for recreational development.

Waste management

Major limitations:

- The moderate permeability and surface texture restrict the use for treatment of wastewater by overland flow and rapid infiltration.

Minor limitations:

- The slope and acid soil reaction restrict the use for land application of waste materials.

Interpretive Groups

Land capability classification: 4s
Ecological site: Sandy PE 48-68

SvD—Silvern very gravelly loamy sand, 1 to 8 percent slopes

Setting

Landform: Uplands
Distinctive surface features: Gravelly
Landscape position: Risers and treads
Slope: Very gently sloping to moderately sloping
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Native vegetation: Post oak, blackjack oak, and elm; little bluestem, paspalum, panicum, and forbs

Typical Profile

Surface layer:
0 to 14 inches—light brownish gray very gravelly loamy fine sand

Subsurface layer:
14 to 69 inches—very pale brown very gravelly loamy fine sand

Subsoil:
69 to 80 inches—light gray very gravelly sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: Very low
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Silvern soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Axtell soils have clayey subsoils and are on similar positions.
- The Edge soils have clayey and loamy subsoils and are on similar positions.
- The Chazos soils have no gravel, sandy surface layers less than 20 inches and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Wildlife habitat and urban development

Management Concerns

Pasture

Major limitations:

- The very gravelly surface layer severely restricts seedbed preparation, seedling emergence, and growth.
- The very low available water capacity severely restricts plant growth and yields.

Cropland

Major limitations:

- The very gravelly surface layer severely restricts seedbed preparation, seedling emergence, and growth.
- The very low available water capacity severely restricts crop growth and yields.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The very gravelly surface layer restricts plant growth.
- The very low available water capacity severely restricts plant growth and yields.

Wildlife habitat

Major limitations:

- There are no major limitations.

Minor limitations:

- The very gravelly surface layer restricts the planting and growth of plants used as food and cover for wildlife.
- The very low available water capacity severely restricts plant growth.

Urban development

Major limitations:

- There are no major limitations.

Minor limitations:

- The surface layer with more than 50 percent by weight of fragments between 2 millimeters and 10 inches restricts the use for urban development.
- The very low available water capacity severely restricts the use for lawns, landscaping, and golf fairways.

Recreation

Major limitations:

- The very gravelly surface layer makes it difficult to maintain a vegetative cover which severely restricts the use for recreational development.
- The moderately sloping terrain severely restricts the use for playgrounds.

Waste management

Major limitations:
- The moderate permeability restricts the application of waste material because of the potential for groundwater contamination.
- The very gravelly surface texture hinders plant growth, and severely restricts the application of waste material.

Minor limitations:
- The hazard of surface runoff on slopes of 1 to 8 percent requires special consideration when applying waste material.
- The very low water holding capacity and droughty condition hinders plant growth and restricts the application of waste material.

Interpretive Groups

Land capability classification: 6s
Ecological site: Gravelly PE 48-68

SwA—Singleton fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Nearly level
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Post oak, blackjack oak, red cedar, elm, and yaupon; greenbrier, little bluestem, threeawn, paspalum, bristlegrass, purpletop tridens, broomsedge, and panicum

Typical Profile

Surface layer:
0 to 12 inches—brown fine sandy loam

Subsoil:
12 to 30 inches—brown clay
30 to 35 inches—pale brown sandy clay

Underlying material:
35 to 80 inches—grayish brown shale with sandy clay loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Moderately well drained
Water table: A perched water table occurs at a depth of 3.5 feet to 5 feet during December to May
Flooding: None
Runoff: High
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline to very slight
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Singleton soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Burlewash soils are well drained and on higher positions.
- The Cadell soils are deep and on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts plant growth.
- The dense clayey subsoil limits root penetration which restricts plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts crop growth and yields.
- The water table from 1.5 to 2 feet restricts crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.
- The low available water capacity restricts plant growth and yields.

Wildlife habitat

The Singleton soil is not limited for wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:

- The soil depth, clayey texture subsoil, and droughty condition restrict the use for shallow excavations and lawns and landscaping.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very slow permeability, depth, and droughty condition restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- The depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.

Interpretive Groups

Land capability classification: 3w
Ecological site: Claypan Savannah PE 48-68

SwC—Singleton fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Post oak, blackjack oak, red cedar, elm, and yaupon; greenbriar, little bluestem, threeawn, paspalum, bristlegrass, purpletop tridens, broomsedge, and panicum

Typical Profile

Surface layer:
0 to 7 inches—very pale brown fine sandy loam

Subsoil:
7 to 21 inches—brown clay
21 to 33 inches—pale brown clay loam
33 to 37 inches—very pale brown clay loam

Underlying material:
37 to 80 inches—light gray weakly cemented sandstone with sandy clay loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Moderately well drained
Water table: A perched water table occurs at a depth of 3.5 feet to 5 feet during December to May

Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Low
Root zone: Moderately deep
Salinity: Nonsaline to very slight
Shrink-swell potential: High
Water erosion hazard: Severe

Composition

Singleton soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Burlewash soils are well drained and on higher positions.
- The Cadell soils are deep and on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The low available water capacity restricts plant growth and yields.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for pasture.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Cropland

Major limitations:
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.

Minor limitations:
- The low available water capacity restricts crop growth and yields.
- The water table from 1.5 to 2 feet restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Wildlife habitat

The Singleton soil is not limited for wildlife habitat.

Urban development

Major limitations:

- The seasonal high water table above 2.5 feet requires special consideration for construction of dwellings with a basement.
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very slow permeability, depth, slope, and droughty condition restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application and treatment of waste materials.
- Depth of less than 40 inches requires special consideration when waste materials are applied because of the potential for groundwater contamination.

Interpretive Groups

Land capability classification: 4e
Ecological site: Claypan Savannah PE 48-68

SxB—Styx loamy fine sand, 0 to 2 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Nearly level and very gently sloping with convex slopes
Shape of areas: Irregular
Size of areas: 15 to 50 acres
Native vegetation: Post oak and blackjack oak; greenbrier, little bluestem, brownseed paspalum, sand lovegrass, switchgrass, and Indiangrass

Typical Profile

Surface layer:
0 to 12 inches—pale brown loamy fine sand

Subsurface layer:
12 to 27 inches—very pale brown loamy fine sand

Subsoil:
27 to 55 inches—brownish yellow to yellow sandy clay loam
55 to 80 inches—yellow sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Styx soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Chazos soils have sandy surface layers less than 20 inches thick and are on similar positions.
- The Gholson soils have sandy surface layers less than 20 inches thick and are on higher positions.
- The Padina soils have sandy surface layers greater than 40 inches thick and are on higher positions
- The Tabor soils have clayey subsoils and are on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Range

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The moderate available water capacity restricts plant growth.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The moderate available water capacity restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields because of low fertility and droughty condition.

Wildlife habitat

The Styx soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The sandy surface texture, potential for sloughing, wetness, and droughty condition restrict the use for shallow excavations, dwellings with basement, and lawns and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The sandy surface texture and droughty condition restrict the use for recreational development.

Waste management

Major limitations:
- The sandy surface texture and moderate permeability restrict the use for treatment of wastewater by overland flow and rapid infiltration.

Interpretive Groups

Land capability classification: 3e
Ecological site: Sandy PE 48-68

SyC—Sunev loam, 3 to 5 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 100 acres
Native vegetation: Hackberry and pecan; big bluestem, switchgrass, and Indiangrass

Typical Profile

Surface layer:
0 to 9 inches—brown loam

Subsurface layer:
9 to 15 inches—brown clay loam

Subsoil:
15 to 28 inches—light yellowish brown clay loam

28 to 45 inches—very pale brown silty clay loam
45 to 80 inches—very pale brown and light gray loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: Moderate
Root zone: Very deep
Salinity: None
Shrink-swell potential: Low
Water erosion hazard: Moderate

Composition

Sunev soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Branyon soils have clay textures throughout and are in lower positions.
- The Gholson soils have sandy surfaces and are in lower positions.
- The Luckenbach soils are noncalcareous, have clayey subsoils and are in lower positions.

Land Uses

Major land use: Rangeland
Other land uses: Cropland and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.
- The hazard of erosion on slopes from 3 to 5 percent requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Sunev soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- There are no major limitations.

Minor limitations:

- The slope and low strength restrict the use for small commercial buildings, and local roads and streets.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The gently sloping terrain requires special consideration when constructing a playground.

Waste management

Major limitations:

- The surface texture and moderate permeability restrict the use for treatment of wastewater by overland flow and rapid infiltration.

Minor limitations:

- The slope restricts the use for disposal of wastewater by irrigation and treatment of wastewater by slow rate.

Interpretive Groups

Land capability classification: 3e
Ecological site: Clay Loam PE 44-64

SyE—Sunev loam, 8 to 15 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers
Slope: Strongly sloping and moderately steep with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 100 acres
Native vegetation: Hackberry and pecan; big bluestem, switchgrass, and Indiangrass

Typical Profile

Surface layer:
0 to 8 inches—very dark brown loam

Subsurface layer:
8 to 15 inches—very dark brown loam

Subsoil:
15 to 24 inches—brown loam
24 to 34 inches—dark grayish brown loam
34 to 80 inches—light grayish brown loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Medium
Permeability: Moderate
Available water capacity: Moderate
Root zone: Very deep
Salinity: None
Shrink-swell potential: Low
Water erosion hazard: Severe

Composition

Sunev soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Axtell soils have clayey subsoils and are on similar positions.
- The Gholson soils have sandy surfaces and are in lower positions.
- The Luckenbach soils have noncalcareous surface layers and clayey subsoils, and are in lower positions.

Land Uses

Major land use: Pasture
Other land uses: Cropland, rangeland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- The slope and severe erosion potential restricts seedbed preparation, planting, and growth.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- The susceptibility of this soil to depletion by erosion severely restricts the use for cropland.
- The hazard of erosion on slopes greater than 5 percent severely restricts the use for cropland.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Sunev soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The moderately steep terrain of this area severely restricts the use for small commercial buildings.

Minor limitations:

- The slope and low strength restrict the use for urban development.

Recreation

Major limitations:

- The moderately steep terrain severely restricts these areas for use as playgrounds areas.

Minor limitations:

- The moderately steep terrain requires special consideration when used for recreational development.

Waste management

Major limitations:

- The slope, surface texture, and moderate permeability severely restrict this soil for the disposal and treatment of wastewater because of the potential of excessive surface runoff.

Minor limitations:

- The slope restricts the use for application of waste materials.

Interpretive Groups

Land capability classification: 6e
Ecological site: Clay Loam PE 44-64

TbA—Tabor fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Nearly level with plane to concave surfaces
Shape of areas: Oblong
Size of areas: 25 to 200 acres
Native vegetation: Post oak, elm, and hackberry; little bluestem, big bluestem, Indiangrass, and purpletop

Typical Profile

Surface layer:
0 to 13 inches—pale brown fine sandy loam

Subsoil:
13 to 46 inches—light yellowish brown and brownish yellow clay
46 to 63 inches—yellow clay loam

Underlying material:
63 to 80 inches—light gray sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Tabor soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Axtell soils are redder in the subsoil and on similar or higher positions.
- The Chazos and Gholson soils have sandy surface layers and are on similar positions.
- The Styx soils have sandy surface layers greater than 20 inches thick and are on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.
- The moderate available water capacity restricts plant growth

Wildlife habitat

The Tabor soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:
- The clayey texture and droughty condition require special consideration when used for shallow excavations and lawns and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and droughty condition restrict the use for recreational development.

Waste management

Major limitations:
- The very slow permeability and surface texture may promote wet conditions and hinder the application of waste material and treatment of wastewater.

Interpretive Groups

Land capability classification: 3s
Ecological site: Sandy Loam PE 48-68

TbB—Tabor fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Terrace
Distinctive surface features: None
Landscape position: Risers and treads
Slope: Very gently sloping plane to concave surfaces
Shape of areas: Oblong
Size of areas: 15 to 150 acres
Native vegetation: Post oak, elm, and hackberry; little bluestem, big bluestem, Indiangrass, and purpletop

Typical Profile

Surface layer:
0 to 6 inches—brown fine sandy loam

Subsoil:
6 to 24 inches—dark yellowish brown clay
24 to 50 inches—yellowish brown clay
50 to 64 inches—light olive brown clay

Underlying material:
64 to 80 inches—light brownish gray clay loam

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Tabor soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Axtell soils are redder in the subsoil and on similar or higher positions.
- The Chazos and Gholson soils have sandy surface layers and are on similar positions.
- The Styx soils have sandy surface layers greater than 20 inches thick and are on similar positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Wildlife habitat

The Tabor soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:
- The clayey texture and droughty condition require special consideration when used for shallow excavations and lawns and landscaping.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability and droughty condition restrict the use for recreational development.

Waste management

Major limitations:
- The very slow permeability and surface texture may promote wet conditions and hinder the application of waste material and treatment of wastewater.

Interpretive Groups

Land capability classification: 3e
Ecological site: Sandy Loam PE 48-68

TnA—Tinn clay, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plain
Distinctive surface features: Gilgai
Landscape position: Flat
Slope: Nearly level with plane surfaces
Shape of areas: Linear
Size of areas: 25 to 100 acres
Native vegetation: Elm, hackberry, post oak, and ash; switchgrass, Indiangrass, and eastern gamagrass

Typical Profile

Surface layer:
0 to 7 inches—very dark gray clay

Subsoil:
7 to 14 inches—very dark gray clay
14 to 21 inches—dark gray clay
21 to 39 inches—very dark gray clay
39 to 80 inches—very dark gray clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: Occasional for brief duration from February to May
Runoff: High
Permeability: Very slow
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Slight

Composition

Tinn soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Bosque and Degola soils are loamy and on similar positions.
- The Gholson soils have sandy surface layers and are on mounds on higher positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The hazard of occasional flooding during the growing season restricts seedbed preparation and growth of most crops.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The hazard of occasional flooding during the growing season restricts seedbed preparation and growth of most crops.

Rangeland

The Tinn soil is not limited for rangeland.

Wildlife habitat

The Tinn soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- Occasional flooding severely restricts the use for urban development.
- The very high shrink-swell potential and low strength severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The hazard of occasional flooding, very slow permeability, and clayey texture severely restrict the use for recreational development.

Waste management

Major limitations:

- Occasional flooding severely restricts the application of waste material and treatment of wastewater.
- The very slow permeability may promote wet conditions and hinder the application of waste material and treatment of wastewater.

Interpretive Groups

Land capability classification: 2w
Ecological site: Clayey Bottomland PE 44-64

ToA—Tinn clay, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: Gilgai
Landscape position: Flats, depressions
Slope: Nearly level with plane to concave surfaces
Shape of areas: Linear
Size of areas: 50 to 400 acres
Native vegetation: Elm, hackberry, post oak, and ash; switchgrass, Indiangrass, and eastern gamagrass

Typical Profile

Surface layer:
0 to 8 inches—dark gray clay

Subsoil:
8 to 20 inches—dark gray clay
20 to 80 inches—dark grayish brown clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: Frequent for brief duration from February to May
Runoff: Negligible
Permeability: Very slow

Available water capacity: High
Root zone: Deep
Salinity: Nonsaline
Shrink-swell potential: Very high
Water erosion hazard: Slight

Composition

Tinn soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Bosque and Degola soils are loamy and on similar positions.
- The Gholson soils have sandy surface layers and are on higher positions.

Land Uses

Major land use: Pasture
Other land uses: Rangeland, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- Frequent flooding severely restricts seedbed preparation and plant growth and can be hazardous to livestock health.
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- Frequent flooding restricts plants growth.

Cropland

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- Frequent flooding restricts plant growth and can be hazardous to livestock health.

Wildlife habitat

The Tinn soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- Frequent flooding severely restricts the use for urban development.

- The very high shrink-swell potential and low strength severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavations.

Recreation

Major limitations:

- The hazard of frequent flooding, very slow permeability, and clayey texture require special consideration when used for recreational development.

Waste management

Major limitations:

- Frequent flooding severely restricts the application of waste material and treatment of wastewater.
- The very slow permeability may promote wet conditions and hinder the application of waste material and treatment of wastewater.

Interpretive Groups

Land capability classification: 5w
Ecological site: Clayey Bottomland PE 44-64

TrB—Tordia clay, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Mesquite; Texas cupgrass, plains bristlegrass, plains lovegrass trichloris, sideoats grama, and vine-mesquite; agarito and cacti

Typical Profile

Surface layer:
0 to 14 inches—very dark gray clay

Subsoil:
14 to 28 inches—dark gray clay
28 to 36 inches—light brownish gray clay
36 to 44 inches—very pale brown clay

Underlying material:
44 to 80 inches—light gray weakly cemented shale that has clay texture

Soil Properties

Depth: Deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Deep
Salinity: Nonsaline

Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Tordia soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Bryde soils have loamy surfaces and are on similar positions.
- The Elmendorf and Denhawken soils have loamy surface layers and are on similar or higher positions.
- The Gillett soils are moderately deep and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The clayey surface layer restricts seedbed preparation, seedling emergence, and survivability during extreme moisture conditions.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth.

Wildlife habitat

The soil is not limited for openland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell and low strength severely restrict the use for dwellings, small commercial buildings, local roads and streets, and lawns and landscaping

Minor limitations:
- The clayey texture throughout severely restricts shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- The very slow permeability, clayey texture, and slope restrict the use for recreational development.

Waste management

Major limitations:
- The very slow permeability of the surface layer severely restricts disposal of wastewater by the overland flow process.
- The very slow permeability severely restricts disposal of wastewater by rapid infiltration.

Interpretive Groups

Land capability classification: 3e
Ecological site: Rolling Blackland PE 31-44

TtC—Tremona loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping
Shape of areas: Oblong
Size of areas: 15 to 100 acres
Native vegetation: Post oak, blackjack oak, hickory, and yaupon; grapevines, little bluestem, and paspalum

Typical Profile

Surface layer:
0 to 14 inches—brown loamy fine sand

Subsurface layer:
14 to 30 inches—very pale brown loamy fine sand

Subsoil:
30 to 41 inches—light brownish gray clay
41 to 56 inches—light gray sandy clay
56 to 69 inches—white sandy clay loam

Underlying material:
69 to 80 inches—light gray sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Somewhat poorly drained
Water table: A perched water table occurs at a depth of 1.5 feet to 2.0 feet during June to September
Flooding: None

Runoff: High
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Tremona soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Padina soils have sandy surface layers 40 or more inches thick and are on higher positions.
- The Silstid and Silvern soils have loamy subsoils and are on higher positions.
- The Styx soils are well drained and in lower positions

Land Uses

Major land use: Range
Other land uses: Pasture

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The loamy fine sand surface layer greater than 20 inches thick restricts seedling emergence and survivability because of low fertility and droughty condition.
- The moderate available water capacity restricts crop growth and yields.
- The water table from 1.5 to 2.0 feet restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Tremona soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- The seasonal high water table at 1.5 to 2.0 feet severely restricts the construction of dwellings with basements.
- The high shrink-swell potential restricts the use for urban development
- The sandy texture restricts the use for shallow excavations.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very slow permeability, drainage, surface texture, water table, and slope restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material and treatment of wastewater.
- The seasonal high water table between 1.5 and 2.0 feet of the surface may promote wet conditions and hinder the application of waste material and treatment of wastewater.

Interpretive Groups

Land capability classification: 3e
Ecological site: Sandy PE 48-68

W—Water

These areas are natural or constructed bodies of surface water.

WaA—Waelder loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flat plain
Slope: Nearly level with plane to convex surfaces
Shape of areas: Linear
Size of areas: 15 to 100 acres
Native vegetation: Pecan, elm, and oak; little bluestem, big bluestem, Indiangrass, switchgrass, tall dropseed, and Canada wildrye

Typical Profile

Surface layer:
0 to 14 inches—brown loam

Subsoil:
14 to 41 inches—yellowish brown loamy fine sand
41 to 57 inches—brownish yellow loamy fine sand

57 to 64 inches—brown fine sandy loam
64 to 80 inches—very pale brown loamy fine sand

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: Occasional for brief duration from January to December
Runoff: Negligible
Permeability: Moderately rapid
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Waelder soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Bosque soils are calcareous and are in lower positions.
- The Chazos soils have sandy surfaces and are on higher positions.
- The Degola soils have loamy subsoils and are on similar positions.
- The Ganado soils are clayey throughout and are on similar positions.
- The Tabor soils have clayey subsoils and are on higher positions.

Land Uses

Major land use: Rangeland
Other land uses: Pasture, cropland, and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- Occasional flooding during the growing season restricts seedbed preparation and growth of most crops.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- Occasional flooding during the growing season restricts seedbed preparation and growth of most crops.
- The moderate available water capacity restricts crop growth and yields.

Rangeland

The Waelder soil is not limited for rangeland.

Wildlife habitat

The Waelder soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- Occasional flooding severely restricts the use for urban development.

Recreation

Major limitations:
- Occasional flooding restricts the use for camp areas.

Minor limitations:
- Occasional flooding requires special consideration when used for playgrounds and golf fairways.

Waste management

Major limitations:
- Occasional flooding, sandy texture, and permeability severely restrict the application of waste material and treatment of wastewater.

Minor limitations:
- The sandy subsoil restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 2w
Ecological site: Loamy Bottomland PE 48-68

WeA—Waelder loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plain
Distinctive surface features: None
Landscape position: Flat plains and depressions
Slope: Nearly level with plane surfaces
Shape of areas: Linear
Size of areas: 15 to 100 acres
Native vegetation: Pecan, elm, and oak; little bluestem, big bluestem, Indiangrass, switchgrass, tall dropseed, and Canada wildrye

Typical Profile

Surface layer:
0 to 6 inches—brown loam

Subsurface layer:
6 to 16 inches—grayish brown loam

Subsoil:
16 to 31 inches—brownish yellow very fine sandy loam
31 to 37 inches—yellowish brown very fine sandy loam
37 to 43 inches—light yellowish brown very fine sandy loam

43 to 51 inches—very pale brown very fine sandy loam
51 to 78 inches—brown loamy fine sand
78 to 80 inches—grayish brown sandy clay loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: Frequent for brief duration from January to December
Runoff: Negligible
Permeability: Moderately rapid
Available water capacity: Moderate
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Low
Water erosion hazard: Slight

Composition

Waelder soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Bosque soils are calcareous and are in lower positions.
- The Chazos soils have loamy fine sand surfaces and are on higher positions.
- The Degola soils have loamy subsoils and are on similar positions.
- The Ganado soils are clayey throughout and are on similar positions.
- The Tabor soils have clayey subsoils and are on higher positions.

Land Uses

Major land use: Range
Other land uses: Pasture and cropland

Management Concerns

Pasture

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Cropland

Major limitations:
- Frequent flooding severely restricts seedbed preparation and crop growth.

Minor limitations:
- The moderate available water capacity restricts crop growth and yields.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.

Wildlife habitat

The Waelder soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- Frequent flooding severely restricts the use for urban development.
- The sandy texture restricts shallow excavations.

Recreation

Major limitations:
- Frequent flooding restricts the use for camp areas.

Minor limitations:
- Frequent flooding requires special consideration when used for playgrounds and golf fairways.

Waste management

Major limitations:
- Frequent flooding, sandy texture, and permeability severely restrict the application of waste material and treatment of wastewater.

Minor limitations:
- The sandy subsoil restricts the construction of ponds for waste storage or treatment because of the potential for seepage and groundwater contamination.

Interpretive Groups

Land capability classification: 5w
Ecological site: Loamy Bottomland PE 48-68

WsC—Weesatche fine sandy loam, 2 to 5 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping and gently sloping
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Native vegetation: Live oak, mesquite, and huisache; sideoats grama, little bluestem, threeawn, Texas wintergrass, and broomweed; blackbrush and agarito

Typical Profile

Surface layer:
0 to 11 inches—dark brown fine sandy loam

Subsoil:
11 to 36 inches—brown sandy clay loam
36 to 56 inches—brownish yellow sandy clay loam

Underlying material:
56 to 80 inches—brownish yellow fine sandy loam

Soil Properties

Depth: Very deep
Drainage class: Well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Low
Permeability: Moderate
Available water capacity: High
Root zone: Very deep
Salinity: Nonsaline
Shrink-swell potential: Moderate
Water erosion hazard: Moderate

Composition

Weesatche soil and similar inclusions: 80 to 90 percent
Contrasting inclusions: 10 to 20 percent

Contrasting Inclusions

- The Coy soils have clayey subsoils and are on similar or lower positions.
- The Nusil soils have sandy surface layers greater than 20 inches thick and are in lower positions.
- The Papalote soils have clayey subsoil and are in lower positions.

Land Uses

Major land use: Range
Other land uses: Pasture, cropland, and wildlife habitat

Management Concerns

Pasture

The Weesatche soil is not limited for use as pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.

Rangeland

The Weesatche soil is not limited for rangeland.

Wildlife habitat

The Weesatche soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate shrink-swell and low strength restrict the use for urban development.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:
- Slopes from 2 to 5 percent restrict the use for playgrounds.

Waste management

Major limitations:
- The surface texture and moderate permeability restrict the treatment of wastewater by overland flow and rapid infiltration.

Minor limitations:
- The slope restricts disposal of wastewater by irrigation and treatment of wastewater by slow rate.

Interpretive Groups

Land capability classification: 3e
Ecological site: Sandy Loam PE 31-44

WwA—Wilson clay loam, 0 to 1 percent slopes

Setting

Landform: Terraces
Distinctive surface features: None
Landscape position: Treads
Slope: Nearly level with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 25 to 200 acres
Native vegetation: Elm and oak; little bluestem, big bluestem, Texas wintergrass, silver bluestem, Florida paspalum, Virginia wildrye, sideoats grama, vine mesquite, and Indiangrass

Typical Profile

Surface layer:
0 to 5 inches—grayish brown clay loam

Subsoil:
5 to 19 inches—very dark gray clay
19 to 28 inches—dark gray clay
28 to 54 inches—grayish brown and light brownish gray clay
54 to 66 inches—very pale brown clay

Underlying material:
66 to 80 inches—very pale brown clay

Soil Properties

Depth: Very deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: High
Permeability: Very slow
Available water capacity: Moderate
Root zone: Very deep

Salinity: Very slight
Shrink-swell potential: High
Water erosion hazard: Slight

Composition

Wilson soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Branyon soils are clayey throughout and are on similar positions.
- The Chazos soils have loamy fine sand surface layers and are on similar positions.
- The Tabor soils have fine sandy loam surface layers and are on similar positions.

Land Uses

Major land use: Range
Other land uses: Pasture and cropland (fig. 12)

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- The moderate available water capacity restricts the use for pasture.

Figure 12.—Grain sorghum on an area of Wilson clay loam, 0 to 1 percent slopes.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts the use for rangeland.

Wildlife habitat

The Wilson soil is not limited for openland and rangeland wildlife habitat.

Urban development

Major limitations:

- This high shrink-swell potential, clayey texture, and low strength severely restrict the use for urban development.
- The potential for sloughing severely restricts shallow excavation.

Recreation

Major limitations:

- There are no major limitations.

Minor limitations:

- The very slow permeability restricts the use for camp, picnic, and playgrounds areas.

Waste management

Major limitations:

- The very slow permeability may promote wet conditions and hinder the application of waste material and treatment of wastewater.
- The surface texture restricts the use for treatment of wastewater by overland flow.

Interpretive Groups

Land capability classification: 3w
Ecological site: Claypan Prairie PE 44-64

ZkB—Zack fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes

Slope: Very gently sloping with convex surfaces
Shape of areas: Irregular
Size of areas: 50 to 500 acres
Native vegetation: Post oak, mesquite, and yaupon; Florida paspalum, Texas wintergrass, Virginia wildrye, big bluestem, little bluestem, silver bluestem, and Indiangrass

Typical Profile

Surface layer:
0 to 10 inches—brown fine sandy loam

Subsoil:
10 to 20 inches—red clay
20 to 30 inches—red clay
30 to 38 inches—red sandy clay loam

Underlying material:
38 to 80 inches—very pale brown thinly bedded shale that has clay loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Zack soil and similar inclusions: 85 to 95 percent
Contrasting inclusions: 5 to 15 percent

Contrasting Inclusions

- The Edge soils are very deep and are on similar positions.
- The Kurten soils have clayey subsoils, are very deep and are on similar positions.
- The Normangee soils have loamy surfaces and are on higher positions.

Land Uses

Major land use: Range
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderate available water capacity restricts plant growth and yields.
- The moderately deep depth to bedrock restricts root penetration and plant growth.

- The dense clayey subsoil limits root penetration which restricts plant growth and yields.

Cropland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderate available water capacity restricts crop growth and yields.
- The moderately deep depth to bedrock restricts root penetration and crop growth and yields.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.

Rangeland

Major limitations:

- There are no major limitations.

Minor limitations:

- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The moderate available water capacity restricts the use for rangeland

Wildlife habitat

The Zack soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:

- The low strength restricts the use for local roads and streets.
- The high shrink-swell potential, clayey texture, and droughty condition require special consideration when used for urban development.

Recreation

Major limitations:

- The moderate erosion hazard restricts the use for paths and trails.

Minor limitations:

- The very slow permeability, slope, and droughty condition restrict the use for recreational development.

Waste management

Major limitations:

- The very slow permeability and surface texture restricts the application of waste material and treatment of wastewater.

Interpretive Groups

Land capability classification: 3s
Ecological site: Claypan Prairie PE 48-68

ZuB—Zulch fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Upland
Distinctive surface features: None
Landscape position: Backslopes and footslopes
Slope: Very gently sloping with plane to concave surfaces
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Native vegetation: Post oak, mesquite, and yaupon; Florida paspalum, Texas wintergrass, Virginia wildrye, big bluestem, little bluestem, silver bluestem, and Indiangrass

Typical Profile

Surface layer:
0 to 6 inches—grayish brown fine sandy loam

Subsoil:
6 to 18 inches—dark grayish brown clay
18 to 32 inches—dark gray clay
32 to 39 inches—light brownish gray clay loam

Underlying material:
39 to 80 inches—light gray interbedded shale that has clay loam texture

Soil Properties

Depth: Moderately deep
Drainage class: Moderately well drained
Water table: None within a depth of 6 feet
Flooding: None
Runoff: Very high
Permeability: Very slow
Available water capacity: Moderate
Root zone: Moderately deep
Salinity: Nonsaline
Shrink-swell potential: High
Water erosion hazard: Moderate

Composition

Zulch soil and similar inclusions: 85 to 90 percent
Contrasting inclusions: 10 to 15 percent

Contrasting Inclusions

- The Edge soils are very deep and on similar positions.
- The Kurten soils have clayey subsoils, are very deep, and are on similar positions.
- The Normangee soils have loamy surfaces and are on higher positions.

Land Uses

Major land use: Range
Other land uses: Pasture and wildlife habitat

Management Concerns

Pasture

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The dense clayey subsoil limits root penetration which restricts plant growth and yields.
- The moderate available water capacity restricts the use for pasture.

Cropland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and crop growth.
- The very slow permeability can cause wet conditions that restrict seedbed preparation, planting, and growth.
- The susceptibility of this soil to the effects of erosion requires special consideration when used for cropland.
- The dense clayey subsoil limits root penetration which restricts crop growth and yields.
- When dry, the soil is droughty and forms a surface crust which restricts crop growth and yields.
- The moderate available water capacity restricts the use for cropland.

Rangeland

Major limitations:
- There are no major limitations.

Minor limitations:
- The moderately deep depth to bedrock restricts root penetration and plant growth.
- The moderate available water capacity restricts the use for rangeland.

Wildlife habitat

The Zulch soil is not limited for openland, woodland, and rangeland wildlife habitat.

Urban development

Major limitations:
- The high shrink-swell potential and low strength require special consideration when used for urban development.

Minor limitations:
- The clayey texture restricts the use for shallow excavations.

Recreation

Major limitations:
- There are no major limitations.

Minor limitations:

- The very slow permeability and slope may promote wet conditions and restrict the use for camp, picnic and playgrounds areas.

Waste management

Major limitations:

- The very slow permeability and surface texture severely restrict the application of waste materials and treatment of wastewater.

Interpretive Groups

Land capability classification: 3e
Ecological site: Claypan Prairie PE 48-68

Prime Farmland

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 5 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 243,200 acres in the survey area, or about 35 percent of the total acreage, meets the soil requirements for prime farmland.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 8. For some soils identified as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

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

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited*, and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited*, and *unsuited* or as *good, fair*, and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

James B. Henderson, Conservation Agronomist, NRCS, assisted with the preparation of this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Texas Cooperative Extension.

In Gonzales County, about 174,000 acres or about 25 percent of the land area is used for cropland, pastureland and orchards.

Management of Cropland

About 31,000 acres in the county are cropland. Of this total, only a few hundred acres are irrigated annually and the remainder is farmed dryland.

The major nonirrigated crops are peanuts, grain sorghum, corn, forage sorghum, wheat, oats, and watermelons.

The irrigation that is done is on a supplemental basis on peanuts. Irrigation water comes mainly from the Carrizo Sand Aquifer and from the Guadalupe River. Sprinkler irrigation systems are used. Sprinkler systems throughout the county include center pivot systems, lateral move systems and hand lines. A well planned irrigation water management system is needed to conserve water, maximize efficiency, and to ensure the maximum crop benefit with each inch of applied water.

On all cropland, soil and water conservation are important concerns. Crop residue management and practices such as cover cropping, contour farming, and field terracing address these concerns. These practices help to control wind and water erosion, conserve moisture, and maintain or improve soil tilth. Practices that conserve soil moisture generally result in higher crop yields.

Crop residue management practices include crop residue use, delayed seedbed preparation, and conservation tillage. Leaving crop residues on the soil surface protects the soil against wind erosion, reduces soil crusting and detachment of soil particles, thereby decreasing runoff and water erosion (fig. 13), and reduces evaporation of soil moisture. In addition, it improves the tilth of the surface layer and reduces compaction by farm machinery.

Tillage should be sufficient to prepare a good seedbed and control weeds without damaging the structure of the soil. Heavy traffic on the soil, especially when it is wet, causes the formation of a compaction pan by destroying soil structure. Compaction reduces soil porosity and restricts root growth into and through the compacted layer. This limits the ability of the root system of a crop to take up moisture and nutrients, and decreases yields. Compaction also increases the loss of moisture and nutrients through runoff and erosion. Deep chiseling and controlled traffic patterns are two methods that will alleviate compaction problems. Emergency tillage to roughen the soil surface can be used to control wind erosion.

The proper use of fertilizer is needed on all cultivated soils. Some soils will benefit from the application of lime. The soils of Gonzales County vary widely in natural fertility and fertility requirements. Soil analyses and a knowledge of the fertilizer application history on a field is needed to estimate accurately the kinds and amounts of nutrients needed to produce a specific yield. An annual soil test can detect a buildup or depletion of required nutrients for each crop. In addition, plant analyses can be used to determine nutrient deficiencies in a growing crop. Fertilizer materials

Figure 13.—Sheet erosion occurring on an area of Luling clay, 1 to 3 percent slopes. Management practices such as crop residue management can reduce sheet and rill erosion.

should be considered which give the desired level of production with a minimum of environmental hazards. Those formulations which give long-lasting nutrient availability and have a low potential for surface runoff or leaching are good choices.

Management of Pastureland and Hayland

Pastureland and hayland in the county comprise about 140,000 acres (fig. 14). About 200 acres are irrigated and the rest are nonirrigated.

Management includes choosing plants suited to the soil, fertilizing, rotating pastures for proper grazing, proper cutting height and frequency on hayland, and weed control. Irrigation water management is important where pastureland or hayland is irrigated.

Many high producing grasses are suitable for improved pasture. The most widely used grasses are improved and common bermudagrass, kleingrass, and bluestem such as Gordo, Medio, and the Old World varieties. Improved bermudagrasses are the most widely used as irrigated pasture and hayland.

The overseeding of permanent warm-season grasses with annual cool-season species is often used to extend the forage availability for livestock. Annual grasses such as Elbon rye, ryegrass, and oats are used. Legumes are a good overseeding choice for their high protein, reseeding ability, and ability to fix nitrogen for the following warm-season forage. Vetch, arrowleaf clover, rose clover, subterranean clover, and Austrian winterpeas are all adapted to the area.

Application of fertilizer is essential for economical production of quality pasture and hay. Liming may also be of benefit on some soils. Fertilizer should be applied when moisture is adequate and according to need as indicated by soil or plant analysis. Poultry litter from the many local confinement operations is often used as a fertilizer source on pasture and hayland. Careful management is needed to prevent excessive nutrient application and buildup, as well as to prevent surface runoff into local streams.

Figure 14.—Cattle in pasture on an area of Tinn clay, 0 to 1 percent slopes, occasionally flooded.

Rotation of pastures for proper grazing is an important practice. Timely rotation allows for maximum growth efficiency, nutrition, and returns from the improved grasses. Weeds can be controlled by mowing, prescribed burning, flash grazing, or by treating with approved herbicides.

Management of Orchards

In Gonzales County, about 2,000 acres are presently used for orchards. Pecans are the major orchard crop grown, with many soils in the area well suited to pecan production. Most of the soils presently used for irrigated row crops are also suited to pecan production. Many native pecan trees grow along local water courses, and improved varieties are being established in these same areas. Many of these same areas are suited to other orchard crops such as peaches, plums, and apples.

Good orchard management corresponds to a great degree to good management for other crops. Proper tillage, management of residue, a well designed fertilization program, and timely insect and disease control are important practices. The selection of improved pecan varieties also plays an important role in orchard management. Locally, the "Indian" varieties such as "Cheyenne," "Kiowa," "Sioux," and "Choctaw," are often chosen for their high production potential and disease resistance.

Irrigation is becoming increasingly important in pecan production. Most irrigation water for orchards comes from the Carrizo Sand Aquifer or the Guadalupe River. Irrigation systems should be carefully designed and managed for maximum production and efficiency. Sprinkler systems are the most widely used irrigation method locally. The soils in the area are well suited to this irrigation method. Drip irrigation is primarily used for the establishment period of young trees.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 9. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

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

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

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

Crops other than those shown in the yields tables are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Texas Cooperative Extension can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (25).

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of the soils in this survey area is given in the section "Detailed Soil Map Units" and in table 9.

Rangeland

Joe D. Franklin, Range Conservationist, NRCS, assisted with the preparation of this section.

Rangeland is native perennial vegetation consisting of a wide variety of grasses, grasslike plants, forbs, shrubs, and trees. The vegetative species are generally suitable for grazing and are found in sufficient amounts to justify grazing use. Rangeland, or native grassland, receives no regular or frequent cultural treatment such as fertilizer or tillage. The composition and production of the plant community is determined by the soil, climate, topography, overstory canopy, and grazing history.

About 496,100 acres, or 73 percent, of Gonzales County is rangeland. The original vegetation was predominantly an open, fire-climax community composed of tall and mid grasses interspersed with occasional trees and woody shrubs.

The vegetative community of Gonzales County has changed over the past 80 years. Widely fluctuating climatic conditions, abusive livestock grazing, and the elimination of fire (with the exception of wildfire) are the major factors causing vegetative changes to rangeland. The original tall grasses and perennial forbs have been replaced with mid and short grasses, annual forbs, and brush species.

Rangeland is the main renewable natural resource in Gonzales County. Cow-calf operations on ranches are the chief enterprise. Stockers are also utilized to help offset any fluctuations in the cow-calf market. Historically, Gonzales County is the number one county in the state of Texas for having the greatest number of cattle.

Several livestock operations supplement native grassland grazing with tame pasture and grazing crops produced on cropland. Kleingrass along with common and improved bermudagrasses are used as tame pasture grasses. Small grains and forage sorghums are produced on cropland to further enhance livestock grazing. Tame pastures interseeded with legumes and/or small grains to extend the grazing periods also has potential, but is seldom used.

Rangeland forage production occurs primarily during two distinct growth periods. Approximately 60 to 70 percent of the annual growth is produced in April, May, and June when spring rains and moderate temperatures are most favorable to the growth of warm-season plants. A secondary growth of approximately 30 to 40 percent of the annual growth period occurs in September and October when fall rains and gradually cooling temperatures are common.

Soils differ in their capacity to produce forage plants for grazing animals. Soils that potentially produce the same kinds, amounts, and proportions of forage plants compose an ecological site.

Each ecological site produces a unique climax vegetation, which is the stable, native plant community presumed to exist under pre-settlement conditions. The historic plant community regenerates itself and changes very little; however, changes occur in management. The most productive and stable combination of plants on an ecological site is generally the climax vegetation. Cultivated crops can produce more but are less diverse and require much higher input costs.

Decreasers are plants in the climax vegetation that tend to decrease in relative amounts under abusive grazing. They generally are the most productive perennial grasses and forbs and the most desired by livestock.

Increasers are plants in the climax vegetation that increase in relative amounts as the more desirable decreaser plants are reduced by abusive grazing. They are generally less palatable to livestock than decreasers. Increasers produce less pounds of forage per acre than decreasers given the same amount of precipitation. If abusive grazing continues to occur, then the increaser category of plants will then begin to decrease.

Undesirables are plants that normally cannot compete with plants found in the climax plant community for moisture, nutrients, and light. They can become established along with increasers after the climax vegetation has been reduced due to a lack of fire, abusive grazing, or many years of not being grazed. Sometimes these plants are referred to as invaders, however invaders are technically plants not native to the site.

Similarity Index is a term used to express the current kind and amount of vegetation relative to the climax plant community for that site. Moreover, each ecological site is capable of supporting Vegetative States or communities other than the climax community. Sometimes, a vegetative community that is different from the climax plant community is the land user’s objective. This is especially true when managing for wildlife. These vegetative communities are acceptable in resource management as long as no site deterioration is occurring.

Similarity Index is based on air-dry weight of plant species and may not have anything to do with the amount of bare soil that exists. Total annual production is the total annual yield per acre of air-dry vegetation that can be expected to grow on rangelands. Yields are adjusted to consider such factors as exposure, amount of shade, dry periods, and the stage of growth the plants are in. All vegetation is included in the calculation regardless of its availability or palatability to grazing animals. It also includes current year's growth of leaves, twigs (woody plants), fruit (woody plants), and stems (grass plants). The total production does not include the increase in stem diameter of trees and shrubs. Annual production is expressed in pounds per acre of air-dry vegetation for favorable, normal, or unfavorable years of precipitation.

Potential forage production depends on the ecological site. Current forage production depends on the Similarity Index and vigor of the plants. Moisture and nutrients available to plants as well as grazing history influence vigor.

A primary objective of range management is to manage rangelands according to objectives and remain healthy. If this is done, the water cycle is conserved, plant diversity is high, yields are improved, the site is resistant to change, nutrients are cycling, and the soils are protected from erosion.

The main management concern is recognizing milestone changes in the kind of cover on an ecological site. These changes take place gradually and can easily be misinterpreted or overlooked. Growth spurred by heavy rainfall may lead to the erroneous conclusion that the range is in good shape, when actually, the plants present may be comprised of a large percent of annual plants. The long-term trend may actually be toward lower production. On the other hand, some rangeland that has been closely grazed for short periods may have a degraded appearance that temporarily conceals its quality and ability to recover.

Generally, rangeland closer to the climax community will yield better quality and quantity of water than rangeland with many undesirables. Tall or bunch-type grasses will increase the amount of water infiltrating into the soil and reduce runoff. Less runoff will result in less erosion from water flowing over the soil surface, and less down-stream flooding. Thus more water is available to grow grasses and herbaceous vegetation and on some soils, provide recharge to undergroundwater sources.

Following years of prolonged abusive grazing of rangeland, seed sources of desirable vegetation will be eliminated. In such instances, vegetation re-establishment must be applied for management to be effective. This is accomplished by applying one or a combination of the following practices: Brush control, range planting, prescribed burning, fencing, water development, or other mechanical treatments to revitalize stands of native plants. Thereafter, management practices of deferred grazing, prescribed grazing, and prescribed fire, must be applied to maintain and improve the range. A major effect of abusive grazing is removing the option to apply prescribed burning which will favor the herbaceous vegetation and suppress the wood vegetation.

Table 10 provides, for each soil that supports rangeland vegetation, the ecological site and the potential total annual production of vegetation in favorable, normal, and unfavorable years. An explanation of the column headings in the table follows.

An *ecological site* is the end result of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, which has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced somewhat by the surrounding ecological sites. The plant community on an ecological site is typified by an association of species that differs significantly from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service, or online at http://www.nrcs.usda.gov/technical/efotg.

Total dry-weight production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

A typical growth curve for native perennial vegetation representing the percentage of total growth occurring each month for Gonzales County would be:

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	2	3	7	20	30	15	5	10	4	2	1

Approximately 72 percent of the annual production of forage occurs in the months April through July responding to spring and early summer rains. A second smaller growth period may occur in the fall if sufficient moisture is available.

A typical growth curve for small grains representing the percentage of total growth occurring each month for Gonzales County would be:

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
14	18	21	22	6	0	0	0	0	0	9	10

Range trend and Range health techniques are available in the "National Range and Pasture Handbook," which is available in local offices of the Natural Resources Conservation Service, or online at http://www.nrcs.usda.gov/technical/.

Ecological Site Descriptions

There are 31 ecological sites in the soil survey area. These ecological sites occur in three different MLRA's.

The ecological sites in the Southern Blackland Prairie (MLRA 86B) are: Blackland (PE 44-64), Chalky Ridge (PE 44-64), Clay Loam (PE 44-64), Clayey Bottomland (PE 44-64), Claypan Prairie (PE 44-64), Eroded Blackland (PE 44-64), and Loamy Bottomland (PE 44-64).

The ecological sites in the Northern Rio Grande Plains (MLRA 83A) are: Blackland (PE 31-44), Clayey Bottomland (PE 19-44), Gray Sandy Loam (PE 31-44), Loamy Bottomland (PE 31-44), Loamy Sand (PE 31-44), Rolling Blackland (PE 31-44), Salty Prairie (PE 25-44), Sandy (PE 25-44), Sandy Loam (PE 31-44), Shallow (PE 31-44), Sloping Clay Loam (PE 31-44), and Tight Sandy Loam (PE 31-44).

The ecological sites in the Southern Claypan Prairie (MLRA 87A) are: Claypan (PE 48-68), Claypan Prairie (PE 48-68), Claypan Savannah (PE 48-68), Deep Sand (PE 48-68), Gravelly (PE 48-68), Loamy Bottomland (PE 48-68), Sandy, Sandy Loam (PE 48-68), Sandstone Hill (PE 48-68), and Very Deep Sand (PE 48-68).

The following section describes each ecological site in Gonzales County. The potential plant community is described as well as the site's response to heavy continuous grazing. For additional detail on the soils in each ecological site, refer to the section “Detailed Soil Map Units.” Information on rangeland forage yields for each soil can be found in table 10.

Southern Blackland Prairie Ecological Sites (MLRA 86B)

Blackland Ecological Site

The Branyon, Dimebox, Frelsburg, Greenvine, and Luling soils are in this ecological site. The potential plant community is a true prairie. The composition, by weight, is about 95 percent grasses and 5 percent forbs.

About 70 percent of the potential plant community is big bluestem, little bluestem, and Indiangrass. The other grasses are switchgrass, brownseed paspalum, Virginia wildrye, Texas wintergrass, longtom, and meadow dropseed. Forbs include sensitive-briar, Maximilian sunflower, bundleflower, and dotted gayfeather.

Under abusive grazing, little bluestem, Indiangrass, big bluestem, switchgrass, and Maximilian sunflower are replaced by brownseed paspalum and meadow dropseed. If abusive grazing continues for many years, woody plants, such as huisache, baccharis, McCartney rose, and sennabean, significantly increase in abundance.

Chalky Ridge Ecological Site

The Shiner soils are in this ecological site. The potential plant community is a mixture of tall and mid grasses and scattered live oak trees. The total composition, by weight, is 90 percent grasses, 5 percent woody plants, and 5 percent forbs.

About 60 percent of the potential plant community is little bluestem, Indiangrass, and sideoats grama.

Little bluestem and Indiangrass decrease in the plant community under abusive grazing. Texas wintergrass, sideoats grama, and silver bluestem increase. If abusive grazing is prolonged, annual weeds, threeawn, and mesquite invade and make up a substantial part of the annual production and the total production is greatly reduced.

Clay Loam Ecological Site

The Benchley, Carbengle, Cuero, Flatonia, Luckenbach, and Sunev soils are in this ecological site. The potential plant community is a tall grass prairie with some woody plants along drainageways. The composition is about 85 percent grasses, 10 percent forbs, and 5 percent woody plants.

About 75 percent of the potential plant community is little bluestem, Indiangrass, switchgrass, and big bluestem. Other grasses include Florida paspalum, Canada wildrye, sideoats grama, silver bluestem, tall dropseed, Texas wintergrass, and buffalograss. Forbs include Maximilian sunflower, Engelmann daisy, blacksamson, bundleflower, sensitive-briar, yellow neptunia, prairie-clover, snoutbean, tickclover, partridge pea, and vetch. Woody vegetation includes hackberry, elm, and pecan mostly along drainageways, and widely scattered live oaks in the uplands.

Under abusive grazing, big bluestem is grazed out first, followed by Indiangrass, switchgrass, and little bluestem. As the tall grasses decrease in abundance, sideoats grama, silver bluestem, Texas wintergrass, tall dropseed, and low panicums initially increase in abundance and then decrease in abundance as abusive grazing continues. Eventually, the vegetation remaining consists mainly of buffalograss, Texas grama, western ragweed, nightshade, threeawn, milkweed, and mesquite particularly if brush management is not done.

Clayey Bottomland Ecological Site

The Ganado, Navasota, and Tinn soils are in this ecological site. The potential plant community is a savannah. The composition, by weight, is about 70 percent grasses, 20 percent woody plants, and 10 percent forbs.

About 50 percent of the potential plant community is Virginia wildrye, Canada wildrye, sedges, switchgrass, Indiangrass, little bluestem, big bluestem, eastern gamagrass, vine mesquite, and beaked panicum. Forbs include tickclover, snoutbean, lespedeza, blood ragweed, and ironweed.

If the site is not managed, trees and shrubs increase in abundance to form a dense canopy and shade-sensitive prairie grasses decrease in abundance accordingly. If no management continues, tall grasses are replaced by broomsedge bluestem, rattail smutgrass, carpetgrass, bermudagrass, buffalograss, cocklebur, ragweed, and annual grasses and forbs.

Claypan Prairie Ecological Site

The Cadell, Mabank, Normangee, and Wilson soils are in this ecological site. The potential plant community is a prairie. The composition, by weight, is about 85 percent grasses, 10 percent forbs, and 5 percent woody plants.

About 65 percent of the potential plant community is little bluestem, Indiangrass, and paspalums. Other grasses include switchgrass, big bluestem, Virginia wildrye, Canada wildrye, Florida paspalum, sideoats grama, meadow dropseed, Texas wintergrass, vine mesquite, purpletop tridens, brownseed paspalum, buffalograss, low panicum, and sedge. Forbs include Maximilian sunflower, Englemann daisy, halfshrub sundrop, blacksamson, sensitive-briar, yellow neptunia, bundleflower, vetch, snoutbean, Indian paintbrush, milkweed, and western ragweed. Woody plants include oak, elm, hackberry, and coralberry.

Under abusive grazing, big bluestem, little bluestem, Indiangrass, and switchgrass decrease in abundance. These grasses are replaced by silver bluestem, meadow dropseed, Texas wintergrass, and sideoats grama. If abusive grazing continues, the site is dominated by mesquite, huisache, buffalograss, Texas grama, pricklypear, Texas wintergrass, and low panicum.

Eroded Blackland Ecological Site

The Dreyer soils are in this ecological site. The potential plant community is a tall grass prairie. The composition, by weight, is about 85 percent grasses, 10 percent forbs, and 5 percent woody plants. The potential plant community has been destroyed by cultivation or erosion. As a result, the soil quality and plant production potential of this site has been reduced. Usually recovery is dependent upon range planting. Natural recovery takes a long time due to no seed source.

About 70 percent of the potential plant community is little bluestem, Indiangrass, big bluestem, and switchgrass. Other grasses include Virginia wildrye, Canada wildrye, switchgrass, Florida paspalum, Texas wintergrass, and low panicum. Forbs include Maximilian sunflower, Englemann daisy, blacksamson, gayfeather, bundleflower, sensitive-briar, vetch, paintbrush, bluebonnet, ragweed, wine-cup, bluebells, milkweed, and croton. Woody vegetation is scattered motts of live oak, hackberry, elm, and bumelia.

Under abusive grazing, little bluestem, big bluestem, and Indiangrass are grazed out and are replaced by silver bluestem, Texas wintergrass, and sideoats grama. If abusive grazing continues, the site is dominated by mesquite, winged elm, Texas grama, broomweed, and a variety of other annual grasses and forbs.

Loamy Bottomland Ecological Site

The Bosque soils are in this ecological site. The potential plant community is a savannah. The composition, by weight, is about 75 percent grasses, 20 percent woody plants, and 5 percent forbs.

About 50 percent of the potential plant community is switchgrass, Indiangrass, big bluestem, little bluestem, and eastern gamagrass. Other grasses include Virginia wildrye, vine mesquite, purpletop tridens, brownseed paspalum, Carolina jointtail, tall dropseed, buffalograss, and Texas wintergrass. Woody plants include oak, pecan, hackberry, elm, cottonwood, willow, sycamore, ash, and woody vines. Forbs include tickclover, lespedeza, snoutbean, partridge pea, blood ragweed, and ironweed.

Under abusive grazing, the taller grasses are grazed out and woody trees, shrubs, and vines increase in abundance to form a dense canopy. If abusive grazing continues and no brush management is done, the wood canopy thickens and broomsedge bluestem, bermudagrass, Vaseygrass, cocklebur, sunflower, ragweed, and a variety of other annual grasses and forbs grow in open areas.

Northern Rio Grande Plains Ecological Sites (MLRA 83A)

Blackland Ecological Site

The Denhawken, Elmendorf, and Monteola, soils are in this ecological site. The potential plant community is a true prairie comprised of tall and mid grasses with associated forbs, which make up 90 and 10 percent of the total production, respectively.

About 70 percent of the total composition, by weight, is sideoats grama, vine mesquite, Arizona cottontop, Texas cupgrass, plains lovegrass, and plains bristlegrass. Other grasses include pinhole bluestem, buffalograss, Texas wintergrass, common curlymesquite, and fourflower trichloris. Forbs include orange zexmenia, bush sunflower, Englemann daisy, and bundleflower.

Texas cupgrass, sideoats grama, vine mesquite, Arizona cottontop, and plains bristlegrass decrease in abundance under abusive grazing by livestock. These species are replaced by buffalograss, common curlymesquite, hooded windmillgrass, and threeawn. If abusive grazing continues and prescribed burning or brush management is not done, total annual production is reduced and species such as mesquite, huisache, broomweed, and annual grasses and forbs invade and dominate the site.

Clayey Bottomland Ecological Site

The Buchel soils are in this ecological site. The potential plant community is a mixture of tall and mid grasses with hardwoods. The plant composition, by weight, is about 75 percent grasses, 15 percent woody plants, and 10 percent forbs.

About 55 percent of the potential plant community is eastern gamagrass, little bluestem, switchgrass, and Indiangrass. Other important grass species include Canada and Virginia wildrye, southwestern bristlegrass, paspalum, and vine mesquite. Woody species include oak, elm, and pecan.

Eastern gamagrass, little bluestem, Indiangrass, and switchgrass decrease in abundance under abusive grazing by livestock. These are replaced by paspalum and bristlegrass. If abusive grazing continues, annual weeds, bermudagrass, and woody species increase substantially, especially if brush management is not done.

Gray Sandy Loam Ecological Site

The Sarnosa soils are in this ecological site. The potential plant community is an open grassland with scattered woody plants. The plant composition, by weight, is about 90 percent grasses, 5 percent forbs, and 5 percent woody plants.

About 65 percent of the potential plant community is plains bristlegrass, green sprangletop, hooded windmillgrass, tanglehead, fourflower trichloris, and pink pappusgrass. Woody plants include blackbrush, ephedra, guayacan, desert yaupon, Texas kidneywood, Texas colubrine, and mesquite. Forbs include bush sunflower, orange zexmenia, and bundleflower.

Tanglehead, fourflower trichloris, pink pappusgrass, and plains bristlegrass decrease in abundance under abusive grazing by livestock. They are replaced initially by plants such as hooded windmillgrass, curlymesquite, perennial threeawn, and by woody plants. If abusive grazing continues, the woody plants may form a dense canopy over a sparse cover of plants such as perennial threeawn, Hall’s panicum, western ragweed, croton, tumblegrass, red grama, sandbur, and annual weeds and grasses.

Loamy Bottomland Ecological Site

The Meguin and Degola soils are in this ecological site. The potential plant community is a tall and mid grass savannah with scattered woody plants. The plant composition, by weight, is 75 percent grasses, 20 percent woody, and 5 percent forbs.

About 50 percent of the potential plant production is comprised of Virginia wildrye, switchgrass, Indiangrass, big bluestem, little bluestem, and eastern gamagrass. Other grasses include southwestern bristlegrass, Canada wildrye, paspalum, and uniola. Woody species include oak, pecan, hackberry, elm, and ash. Forbs include snoutbean, wildbean, and partridge pea.

Indiangrass, eastern gamagrass, switchgrass, and big bluestem decrease under abusive grazing by livestock. Grasses such as paspalum and southwestern bristlegrass increase as this grazing continues. If abusive grazing continues, annual weeds and woody plants invade the site and reduce desirable production substantially.

Loamy Sand Ecological Site

The Alum, Leming, and Papalote soils are in this ecological site. The potential plant community is a savannah with scattered oaks. The potential plant composition is 85 percent grasses, 10 percent forbs, and 5 percent woody plants.

About 60 percent of the total production is comprised of little bluestem, plains bristlegrass, switchgrass, and Arizona cottontop. Other grasses include sideoats grama, bluestem, fall witchgrass, brownseed paspalum, and hooded windmillgrass. Forbs include bush sunflower, orange zexmenia, snoutbean, western indigo, and gayfeather. Woody plants are live oak, post oak, and hackberry.

Little bluestem, switchgrass, and tanglehead decrease with abusive grazing. Sideoats grama and hooded windmillgrass increase and annual forbs become abundant in the plant community. If the site is not managed, Mesquite and pricklypear commonly invade.

Rolling Blackland Ecological Site

The Coy, Eloso, Rosenbrock, and Tordia soils are in the Rolling Blackland ecological site.

The historic climax plant community is a fire climax, open prairie. This site is dominated by mid and short grasses. The composition by weight is 90 percent grasses and 5 percent forbs. Woody shrubs were found on this site historically and make up 5 percent of the total composition.

The historic climax plant community is dominated by trichloris, Arizona cottontop, vine mesquite, sideoats grama, and several bristlegrass species. Other important plants include Texas cupgrass, Texas wintergrass, buffalograss, silver bluestem, awnless bushsunflower, dotted gayfeather, least snoutbean, velvet bundleflower, and yellow neptunia.

Heavy continuous overgrazing by cattle causes a decrease in the annual production of the most desirable (decreaser) plants such as trichloris, Texas cupgrass, sideoats grama, and Arizona cottontop. These are replaced by increasers including vine mesquite, sideoats grama, Texas wintergrass, and buffalograss. As retrogression continues, threeawn, red grama, tumble windmillgrass, and undesirable forbs invade the site. Woody plants such as blackbrush, granjeno, and condalias also invade and increase on this site.

Salty Prairie Ecological Site

The Cost soils (fig. 15) are in this ecological site. The potential plant community is an open grassland dominated by gulf cordgrass with colonies of salt-tolerant grasses and woody plants. The plant composition, by weight, is about 90 percent grasses, 5 percent woody plants, and 5 percent forbs.

About 60 percent of the total production is comprised of salt flat grass, gulf cordgrass, marshhay cordgrass, switchgrass, spiny aster, alkali sacaton, whorled dropseed, glasswort on salted-out spots, and other perennial grasses. Woody species include scattered motts of bushy sea-oxeye, and mesquite. Also a small percentage of perennial forbs is scattered throughout the area. Abusive grazing, over the long term will result in salt flat grass, forbs, and woody plants invading and dominating the site.

Figure 15.—An area of Cost loamy fine sand, 0 to 1 percent slopes, occasionally flooded. Salt tolerant plants, such as salt flat grass, is in the foreground. Barren areas where the salt content is toxic to plants is in the background. This area is in the Salty Prairie Ecological Site.

Sandy Ecological Site

The Nusil and Rhymes soils are in this ecological site. The potential plant community is an open savannah with scattered post and blackjack oaks. The plant composition, by weight, is 80 percent grasses, 10 percent woody, and 10 percent forbs.

About 60 percent of the potential plant community is little bluestem, seacoast bluestem, Indiangrass, switchgrass, Arizona cottontop, and brownseed paspalum. Other grasses include sideoats grama, hooded windmillgrass, crinkleawn, tanglehead, and threeawn. Woody species include post oak and blackjack oak, mustang grapes, and some live oaks. Forbs include snoutbean, western indigo, and annuals.

Indiangrass, little bluestem, switchgrass, and Arizona cottontop tend to decrease under abusive grazing. They are replaced by sideoats grama, brownseed paspalum, and hooded windmillgrass. If abusive grazing continues, threeawn, annual grasses and forbs, and woody plants invade the site.

Sandy Loam Ecological Site

The Weesatche soils are in this ecological site. The potential plant community is an open savannah with scattered trees and shrubs. Total composition, by weight, is 90 percent grasses, 5 percent woody, and 5 percent forbs.

About 60 percent of the potential plant community is little bluestem, silver bluestem, plains bristlegrass, sideoats grama, and Arizona cottontop. Other grasses which may be found include threeawn, hooded windmillgrass, and panicum. Woody plants include Texas kidneywood, granjeno, live oak, and wolfberry. Forbs include bundleflower, western indigo, and bush sunflower.

Little bluestem, plains bristlegrass, and Arizona cottontop decrease under abusive grazing. Plants such as silver bluestem, sideoats grama, and hooded windmillgrass increase. If abusive grazing continues, threeawn, panicum, annual grasses and forbs, and woody plants such as mesquite, blackbrush, and huisache invade and dominate the site.

Shallow Ecological Site

The Ecleto and Pavelek soils are in this ecological site. The potential plant community is an open grassland interspersed with some scattered woody shrubs and perennial forbs. The composition, by weight, is about 90 percent grasses, 5 percent forbs, and 5 percent woody plants.

About 60 percent of the total production is comprised of sideoats grama, Arizona cottontop, vine mesquite, plains bristlegrass, and plains lovegrass. Other grasses include fall witchgrass, slim tridens, hooded windmillgrass, perennial threeawn, buffalograss, and common curlymesquite. Forbs include bushsunflower, orange zexmenia, Englemann daisy, and half-shrub sundrop. Woody plants include species such as live oak, elbowbush, guajillo, guayacan, ephedra, condalia, blackbrush, cenizo, mesquite, and littleleaf sumac.

Plains bristlegrass, plains lovegrass, and sideoats grama are preferred by livestock and thus are grazed out during abusive grazing. These plants are replaced initially by such plants as perennial threeawn, fall witchgrass, slim tridens, and woody plants. If abusive grazing continues, the woody shrubs invade or increase in abundance and dominate the sparse understory of short grasses.

Sloping Clay Loam Ecological Site

The Schattel soil is in this ecological site. The historic climax plant community is open grassland with a scattered blackbrush or woody shrubs. Mid grasses are dominant. The site supports climax forbs, such as awnless bushsunflower, orange zexmenia, and velvet bundleflower. This site is summits and upper side slopes of hills, generally surrounded by the Rolling Blackland ecological site. The soils are slight and moderate saline at a subsoil depth of about 4 feet; however, salinity levels are not high enough to produce salt-tolerant species. The climax composition by weight is 90 percent grasses, 5 percent forbs, and 5 percent woody plants.

The historic climax plant community is dominated by decreaser grasses such as pink pappusgrass, Arizona cottontop, trichloris, and plains bristlegrass. Other desirable grasses are Texas wintergrass, plains lovegrass, slim tridens, buffalograss, and sideoats grama.

This site is slow to recover after the grass cover is removed through heavy continuous overgrazing, leaving a soil crust that retards rainfall. As retrogression occurs, blackbrush, mesquite, and other mixed-brush and cacti form a dense canopy. Common invaders are red grama, Texas grama, Hall panicum, and threeawn.

Tight Sandy Loam Ecological Site

The Bryde (fig. 16), Gillett, Griter, Imogene, and Papalote soils are in this ecological site. The potential plant community is an open grassland interspersed with scattered woody plants and some forbs. The plant composition, by weight, is about 90 percent grasses, 5 percent woody plants, and 5 percent forbs.

About 60 percent of the total production is comprised of fourflower trichloris, little bluestem, sideoats grama, Texas wintergrass, tanglehead, and Arizona cottontop. Other grasses include plains bristlegrass, plains lovegrass, hooded windmillgrass, silver and pinhole bluestem, fringeleaf paspalum, threeawn, buffalograss, and common curlymesquite. Forbs include bushsunflower, Englemann daisy, orange zexmenia, and bundleflower. Woody plants typically found include Texas kidneywood, ephedra, spiny bumelia, mesquite, condalia, and granjeno.

Figure 16.—An area of Bryde fine sandy loam, 1 to 3 percent slopes. The Bryde soil is in the Tight Sandy Loam Ecological Site.

Fourflower trichloris, little bluestem, tanglehead, and Arizona cottontop tend to decrease under abusive grazing by livestock. These are replaced initially by sideoats grama, hooded windmillgrass, Texas wintergrass, and silver and pinhole bluestem. If abusive grazing continues, threeawn, red and Texas grama, annual grasses and forbs, and woody plants invade and dominate the site.

Southern Claypan Prairie Ecological Sites (MLRA 87A)

Claypan Prairie Ecological Site

The Crockett, Zack, and Zulch soils are in this ecological site. The potential plant community is an open grassland with scattered post oaks and hackberry. Total plant composition, by weight, is 90 percent grasses, 5 percent woody plants, and 5 percent forbs.

About 50 percent of the potential plant community is little bluestem, Indiangrass, and sideoats grama. Other grasses typically found include Florida and fringeleaf paspalum, Virginia wildrye, Texas wintergrass, and buffalograss. Woody plants include post oak and hackberry. Forbs include plants such as yellow neptunia, hairy ruellia, and western indigo.

Indiangrass and little bluestem tend to decrease under abusive continuous grazing by livestock. Sideoats grama, paspalum, Texas wintergrass, and buffalograss increase and replace the taller grasses. If abusive grazing continues, threeawn, annual grasses and forbs, and mesquite invade and dominate the site.

Claypan Savannah Ecological Site

The Arol, Axtell, Burlewash, Edge, Kurten, Rutersville, Shalba, and Singleton soils are in this ecological site. The potential plant community is an open savannah of tall and mid grasses with scattered post and blackjack oaks. Plant composition, by weight, is 80 percent grasses, 15 percent woody, and 5 percent forbs.

About 60 percent of the potential plant community is little bluestem, Indiangrass, beaked panicum, switchgrass, purpletop tridens, and sideoats grama. Other grasses typically found include brownseed paspalum, Florida paspalum, tall dropseed, fall witchgrass, and Texas wintergrass. Woody plants include post oak, blackjack oak, yaupon, elbowbush, elm, and greenbrier. Forbs include yellow neptunia, lespedeza, gayfeather, and western ragweed.

Little bluestem, Indiangrass, switchgrass, and purpletop tridens decrease under abusive grazing. Plants including sideoats grama, beaked panicum, brownseed paspalum, and tall dropseed increase. If abusive grazing continues, fall witchgrass, threeawn, panicum, annual forbs, and woody plants invade and dominate the site.

Deep Sand Ecological Site

The Padina soils are in this ecological site. The potential plant community is an open prairie with tall and mid grasses, forbs, and scattered oaks. The plant composition, by weight, is 75 percent grasses, 10 percent woody, and 15 percent forbs.

About 50 percent of the potential plant community is little bluestem, Indiangrass, eastern gamagrass, purpletop tridens, and Scribner panicum. Other grasses include red lovegrass, Florida and fringeleaf paspalums, tall dropseed, longleaf uniola, and threeawn. Forbs include snoutbean, wildbean, partridge pea, and prairie clover. Woody vegetation is mostly motts of post and blackjack oaks, American beautyberry, yaupon, and other shrubs.

Little bluestem, eastern gamagrass, Indiangrass, and purpletop tridens tend to decrease under abusive grazing. Plants including tall dropseed, Florida paspalum, and fringeleaf paspalum increase. If abusive grazing continues, the site becomes dominated by red lovegrass, yaupon, eastern red cedar, and annual forbs and grasses.

Gravelly Ecological Site

The Silvern soils are in this ecological site. The potential plant community is an open stand of tall and mid grasses with scattered post oaks. Total plant composition, by weight, is 80 percent grasses, 15 percent woody plants, and 5 percent forbs.

About 60 percent of the potential plant community is little bluestem, brownseed paspalum, and beaked panicum. Other grasses include tall dropseed, threeawn, and low panicum. Woody plants include post oak and yaupon. Forbs include western ragweed, gayfeather, and annuals.

Little bluestem and beaked panicum tend to decrease under abusive grazing by livestock. As these species decrease, plants such as brownseed paspalum, tall dropseed, and low panicum increase. If abusive grazing continues, annual weeds and grasses and woody plants invade and dominate the site.

Loamy Bottomland Ecological Site

The Waelder soils are in this ecological site. The potential plant community is a mixture of tall and mid grasses, shrubs, and trees. Total plant composition, by weight, is 80 percent grasses, 15 percent woody, and 5 percent forbs.

About 60 percent of the potential plant community is little bluestem, switchgrass, Indiangrass, eastern gamagrass, and big bluestem. Other grasses include Canada wildrye, tall dropseed, Texas wintergrass, longleaf uniola, southwestern bristlegrass, paspalum, and panicum. Woody plants typically found on this site are elm, live oak, hickory, hackberry, and pecan. Forbs include snoutbean, wildbean, hairy ruellia, and spiderwort.

Little bluestem, switchgrass, Indiangrass, eastern gamagrass, and big bluestem tend to decrease under abusive continuous grazing. Grasses, such as tall dropseed, Texas wintergrass, southwestern bristlegrass, and paspalum increase. If abusive grazing continues, woody plants, low panicum, and annual forbs and grasses invade and dominate the site.

Sandy Ecological Site

The Silstid, Styx, and Tremona soils are in this ecological site. The potential plant community is an open savannah of tall and mid grasses with post and blackjack oaks. The total plant composition, by weight, is 80 percent grasses, 15 percent woody, and 5 percent forbs.

About 60 percent of the potential plant community is little bluestem, Indiangrass, and switchgrass. Other grasses include fall witchgrass, beaked panicum, sand lovegrass, crinkleawn, purpletop tridens, brownseed paspalum, and low panicum. Woody plants typically found include post oak, blackjack oak, hawthorn, elm, American beautyberry, yaupon, and greenbrier. Forbs include lespedeza, sensitive-briar, snoutbean, wildbean, western indigo, partridge pea, and yankeeweed.

Little bluestem, switchgrass, and Indiangrass decrease under abusive grazing. Sand lovegrass, crinkleawn, brownseed paspalum, broomsedge bluestem, and low panicum increase and replace the taller species. If abusive grazing continues, oak, yaupon, greenbrier, red lovegrass, smutgrass, sandbur, and annual grasses and forbs increase or invade and dominate the site.

Sandy Loam Ecological Site

The Chazos, Gholson, Rosanky (fig. 17), Shiro, and Tabor soils are in this ecological site. The potential plant community is a grassland savannah with scattered post and blackjack oaks. The total plant composition, by weight, is 80 percent grasses, 15 percent woody plants, and 5 percent forbs.

About 65 percent of the potential plant community is comprised of little bluestem, Indiangrass, and switchgrass. Other grasses include beaked panicum, big bluestem, longleaf uniola, brownseed paspalum, low panicum, and silver bluestem. Woody plants typically found include post oak, blackjack oak, hickory, yaupon, and elm. Forbs include Englemann daisy, gayfeather, sensitive-briar, lespedeza, tickclover, wildbean, snoutbean, partridge pea, and ragweed.

Figure 17.—Cattle grazing on bermudagrass in an area of Rosanky fine sandy loam, 1 to 3 percent slopes. The Rosanky soils are in the Sandy Loam Ecological Site.

Little bluestem, Indiangrass, and switchgrass decrease under abusive grazing. Silver bluestem, broomsedge bluestem, carpetgrass, and bermudagrass increase and replace the taller grasses. If abusive grazing continues, oak, elm, yaupon, mesquite, eastern red cedar, and greenbrier increase or invade and dominate the site.

Sandstone Hill Ecological Site

The Jedd soils are in this ecological site. The potential plant community is a grassland savannah of tall and mid grasses with scattered post oaks. Plant composition, by weight, is 75 percent grasses, 15 percent woody plants, and 10 percent forbs.

About 65 percent of the potential plant community is comprised of little bluestem, Indiangrass, and purpletop tridens. Other grasses include sideoats grama, Texas wintergrass, vine mesquite, pinhole and silver bluestem, and Canada wildrye. Woody plants typically found include post oak, blackjack oak, and live oak. Forbs include western indigo, ragweed, and annuals.

Little bluestem, Indiangrass, and purpletop tridens tend to decrease in the plant community under abusive grazing. As these species decrease, sideoats grama, Texas wintergrass, and silver and pinhole bluestem increase. If abusive grazing continues, oaks, yaupon, mesquite, greenbrier, threeawn, and annual forbs invade and dominate the site unless management practices are applied to retard the canopy closure.

Very Deep Sand Ecological Site

The Arenosa soils are in this ecological site. The potential plant community is an open prairie with tall and mid grasses, forbs, and scattered oaks. The plant composition, by weight, is 55 percent grasses, 30 percent woody, and 15 percent forbs.

About 45 percent of the potential plant community is little bluestem, Indiangrass, eastern gamagrass, purpletop tridens, and Scribner panicum. Other grasses include red lovegrass, Florida and fringeleaf paspalum, tall dropseed, longleaf uniola, and threeawn. Forbs include snoutbean, wildbean, partridge pea, and prairie clover. Woody vegetation is mostly motts of post and blackjack oaks, American beautyberry, yaupon, and other shrubs.

Little bluestem, eastern gamagrass, Indiangrass, and purpletop tridens tend to decrease under abusive continuous grazing. Plants including tall dropseed, Florida paspalum, and fringeleaf paspalum increase. If abusive grazing continues, the site becomes dominated by red lovegrass, yaupon, eastern red cedar, and annual forbs and grasses.

Recreation

With its suitable soil, favorable climate, and close proximity to major metropolitan areas, Gonzales County provides a high potential for a wide range of year round outdoor activities. Daytime temperatures and annual rainfall rates allow outdoor activities for most days of the year. The survey area has an extensive network of improved and unimproved roads for easy access throughout the county.

Gonzales County is traversed by the San Marcos and Guadalupe Rivers which afford the opportunity for a variety of recreational activities. Palmetto State Park, located along the San Marcos River in the northern part of the county, has been created because the swampy condition in this area has preserved a unique plant community. The park is equipped for a variety of recreational activities. Nature trails wind through the park. The park has facilities for tents and recreational vehicles. The San Marcos River offers canoeing and fishing opportunities. The Guadalupe River, which flows through the middle of the county, provides excellent opportunities for boating and fishing, especially at Lake Wood Recreational Area and Lake Gonzales which have been created along the river west of the city of Gonzales.

With the majority of the county privately owned, hunting for white-tailed deer, feral hogs, turkey, quail, and dove is available through hunting leases. Since Gonzales County played a major role in early Texas history, many state historical markers and sites are located within the survey area. In addition, Pioneer Village, a living history park, depicts life in the early days of Texas.

The soils of the survey area are rated in table 11 and table 12, according to limitations that affect their suitability for recreation. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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

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

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Jerry Turrentine, Biologist, NRCS, assisted in preparing this section.

Wildlife is an important resource in Gonzales County. Much of the land that supports wildlife is leased for hunting or is hunted by the landowners. With good management of the habitat, many wildlife species in the county are increasing. Special emphasis and management are being applied to improve the habitat for game species.

The major game species include white-tailed deer, turkey, javelina, bobwhite quail, and mourning dove. Although not a game animal, feral or wild domestic hogs are increasing in many locations and are also hunted. They can cause significant property damage. Many non-game species are benefited from game management. Also present are fox, raccoon, skunk, opossum, nutria, armadillo, cottontail rabbit, jackrabbit, squirrel, bats, and numerous rodents. Resident predators are the coyote and bobcat, along with an occasional mountain lion.

Intensive management of deer herds to produce quality bucks is increasing. Some of the ranches are also high fenced to allow for more control of white-tailed deer quality and to contain exotics.

Many soils are suitable for impounding water. Most ponds and streams are stocked with channel catfish, largemouth bass, and sunfish. Fishing is good in the Guadalupe and San Marcos Rivers.

Water areas receive a high degree of use by animals and birds and provide habitat for amphibians. Frogs, toads, and other amphibians are well distributed. Among the several species of reptiles occurring is the diamondback rattlesnake, which is the best known.

During the migration period, waterfowl utilize water areas. Species include pintail, gadwall, mallard, shoveler, American widgeon, ring-necked duck, and ruddy duck.

The birds in the county include numerous species of neotropical migrants, water associated species, and vultures. Neotropical migrants are birds that breed in North America and winter in Central and South America, such as the purple martin. Many raptors, such as the sharp-shinned hawk, marsh hawk, and red-tailed hawk live in or migrate through the survey area.

No Federally listed threatened or endangered plants or animals occurred in the county at the time of this writing. The county is in the migration route of the whooping crane. Frequently species are listed as threatened or endangered because the true extent of their population is not known.

Successful management of wildlife on any tract of land requires food, cover, and water in suitable combination. Lack of any one of these, and unfavorable balance among them, or an inadequate distribution of them can severely limit, or account for the absence of a desired kind of wildlife. Information on the soil provides a valuable tool in creating, improving, or maintaining suitable food, cover, and water for wildlife.

Management includes several practices for improving rangeland. Controlled grazing, planned grazing systems, and deferred grazing allow increased forage production for wildlife habitat. This provides cover for quail and turkey and fawning areas for deer. Grasses allowed to mature also provide seed for dove, quail, and turkey.

Brush management is an important management tool. Brush is cleared in strips and patterns to create diversity in the food source for various species. Prescribed burning helps maintain diversity and forage quality. Other practices include disking and planting for food and cover. Water facilities help distribute and extend habitat areas.

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

Table 13 provides the soils in the survey area that are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

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

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

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

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are post oak, blackjack oak, live oak, pecan, hackberry, and prickly ash.

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

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are yaupon, American beautyberry, and dewberry.

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

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

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

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, white-tailed deer, dove, and coyote.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodpecker, squirrel, fox, raccoon, white-tailed deer, bobcat, and owl.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are duck, geese, heron, and kingfisher.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include white-tailed deer, skunk, coyote, meadowlark, and lark bunting.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology. (8)(14)(21)(22) Criteria for each of the characteristics must be met for areas to be identified as wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (9). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (10). The criteria are used to identify a phase of a soil series that normally is also a hydric soil. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (20) and "Keys to Soil Taxonomy" (19) and in the "Soil Survey Manual" (18).

If soils are wet enough for a long enough period to be considered hydric, they generally exhibit certain properties that can be observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (12).

For information regarding hydric soils in the soil survey area, refer to the USDA Natural Resources Conservation Service Soil Data Mart at http://soildatamart.nrcs.usda.gov.

Engineering

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

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

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

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

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 14 and table 15, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Table 16 and table 17 show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the groundwater may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of groundwater. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the groundwater. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Agricultural Waste Management

Chris J.Stoner, Engineer, NRCS, assisted in preparing this section.

Poultry production (including turkeys, broilers, and laying hens) is a major industry in the county (fig. 18). Consequently, disposal of waste from these industries is a major environmental concern. Manure is generally applied to the land using a nitrogen-balance approach. This method balances the rate of the application of available nitrogen (manure) with the amount of nitrogen expected to be used by a growing plant. This rate will vary significantly depending on the type of plant to which it is applied. In using this method, it is likely that the phosphorus and potassium content of the manure will exceed the needs of the growing plant. Although this will not immediately affect crop growth, it should be monitored through annual soil analysis, so that levels do not become extremely high. High phosphorus levels can cause water quality problems; however, phosphorus is less mobile in the soil than nitrogen. Potassium is more mobile than phosphorus, but does not pose a threat to public health or to the environment. A soil analysis is also recommended prior to the establishment of a poultry facility to determine if adequate land is available for disposal.

The ratings in table 18, table 19, and table 20 are for waste management systems that not only dispose of and treat organic waste or wastewater, but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

Figure 18.—An area of Tabor fine sandy loam, 0 to 1 percent slopes, on a nearly level terrace. Poultry houses are in the background.

Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the groundwater.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the groundwater. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the groundwater, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface.

Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Construction Materials

Table 21 and table 22 provide information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 21, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair*, or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In table 22, the rating class terms are *good, fair*, and *poor*. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

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

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

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

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Water Management

Table 23 and table 24 provide information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. The underlying material is not rated and should be evaluated during an onsite investigation. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

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

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

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

Soil Properties

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

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

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 25 provides the engineering classifications and the range of engineering index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

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

Classification of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

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

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

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Soil Properties

Table 26 provides estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

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

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Soil Properties

Table 27 provides estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

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

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

Table 28 provides estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

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

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to very deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long,* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

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

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 29 provides estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

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

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

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

Physical and Chemical Analyses of Selected Soils

The results of physical analyses of several typical pedons in the survey area are given in the Table 30 and the results of chemical analyses are given in Table 31. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by USDA-NRCS National Soil Survey Laboratory, Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to methods published in Soil Survey Investigations Report 42 (23)(24).

Sand—(0.05- to 2.0-millimeter fraction) weight percentages of material less than 2 millimeters (3A1).

Silt—(0.002- to 0.05-millimeter fraction) pipette extraction, weight percentages of all material less than 2 millimeters (3A1).

Clay—(fraction less than 0.002 millimeters) pipette extraction, weight percentages of material less than 2 millimeters (3A1).

Water retained—pressure extraction, percentage of ovendry weight of less than 2-millimeter material; 15 bars (3C2).

Bulk density—of less than 2-millimeter material, saran-coated clods field moist (3B1a), ⅓ bar (3B1b), ovendry (3B1c).

Cation-exchange capacity—sum of cations (4B4b1).

Base saturation—ammonium acetate, pH 7.0 (4B4c1).

Reaction (pH)—1:1 water dilution (4C1a2a1).

Organic carbon—wet combustion. Walkley-Black modified acid-dichromate, ferric sulfate titration (6A1c, obsolete).

Exchangeable Sodium Percentage. (5D).

Sodium adsorption ratio (4F3b).

Electrical conductivity—saturation extract (4F2b1).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (19, 20). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in sol. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Ustalf (*Ust*, meaning burnt, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Paleustalfs (*Pale, meaning old*, plus *ustalf*, the suborder of the Alfisols that has an ustic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Paleustalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, smectitic, hyperthermic Typic Paleustalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Table 32 indicates the order, suborder, great group, subgroup, and family of the soil series in the survey area.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (18) and in the "Field Book for Describing and

Sampling Soils" (17). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (20) and in "Keys to Soil Taxonomy" (19). Unless otherwise stated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

Alum Series

The Alum series consists of very deep, nearly level and very gently sloping, well drained, slowly permeable soils on uplands. These soils formed in loamy sediments weathered from sandstone and ironstone. Slope ranges from 0 to 3 percent. Soils of the Alum series are clayey, mixed, active, thermic Arenic Paleustalfs.

Typical pedon of Alum loamy fine sand, 0 to 3 percent slopes; from the intersection of Farm Road 1682 and Texas Highway 80 in Leesville, 2.1 miles north on Texas Highway 80, 0.6 mile west then north on county road; 1.1 miles west, and 480 feet north in pasture. USGS Dewville topographic quadrangle; lat. 29 degrees 26 minutes 52 seconds N. and long. 97 degrees 45 minutes 21 seconds W.

A—0 to 24 inches; brown (7.5YR 5/4) loamy fine sand, brown (7.5YR 4/4) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable; many very fine and few fine roots; slightly acid; clear smooth boundary.

E—24 to 30 inches; light brown (7.5YR 6/4) loamy fine sand, brown (7.5YR 5/4) moist; weak very fine subangular blocky structure; slightly hard, very friable; common very fine and few fine roots; few ironstone pebbles; slightly acid; abrupt smooth boundary.

Bt1—30 to 45 inches; red (2.5YR 5/8) sandy clay, red (2.5YR 4/8) moist; moderate medium subangular blocky structure; hard, firm; common very fine and fine roots; few thin dark yellowish brown (10YR 4/4) streaks of fine sandy loam; few clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron in ped interiors; few angular sandstone fragments; few ironstone pebbles; moderately acid; clear smooth boundary.

Bt2—45 to 52 inches; red (2.5YR 5/6) sandy clay, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; very hard, very firm; common very fine roots; few clay films on faces of peds; few fine prominent yellowish brown (10YR 5/6) masses of iron in ped interiors; few ironstone pebbles; moderately acid; clear smooth boundary.

Bt3—52 to 62 inches; red (2.5YR 5/6) sandy clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; very hard, very firm; common very fine roots; few clay films on faces of peds; common fine and medium prominent yellowish brown (10YR 5/8) and few medium distinct red (2.5YR 5/8) masses of iron in ped interiors; moderately acid; clear smooth boundary.

C—62 to 80 inches; light reddish brown (5YR 6/4) sandy clay loam, reddish brown (5YR 5/4) moist; massive; hard, firm; estimated 6 percent by volume of sandstone fragments; few reddish yellow (7.5YR 6/8) sand coats on faces of peds; moderately acid.

The solum thickness ranges from 40 to 70 inches. The clay content in the control section ranges from 35 to 45 percent. The combined thickness of the A and E horizons ranges from 20 to 40 inches. Sandstone fragments or ironstone pebbles comprise 0 to 3 percent of any horizon.

The A horizon has hue of 7.5YR, value of 4 to 6, and chroma of 3 to 6. The E horizon is 1 or 2 units of value higher in color than the A horizon.

The Bt horizon has hue of 2.5YR or 5YR, value of 5, and chroma of 6 or 8. Texture is sandy clay or clay and ranges to sandy clay loam or clay loam in the lower part of the Bt horizon. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction is strongly acid or moderately acid.

The C horizon has hue of 5YR or 7.5YR value of 5 to 7, and chroma of 4 to 6. Texture is sandy loam, loam, or sandy clay loam that is interbedded with thin discontinuous strata of sandstone. Masses of iron in shades of red, yellow, or brown range from few to common.

Arenosa Series

The Arenosa series consists of very deep, very gently sloping and gently sloping, somewhat excessively drained, rapidly permeable soils on uplands. These soils formed from deep beds of sand. Slope ranges from 1 to 5 percent. Soils of the Arenosa series are thermic, uncoated Ustic Quartzipsamments.

Typical pedon of Arenosa fine sand, 1 to 5 percent; from the intersection of Texas Highway 90 and Texas Highway 97 in Waelder, 4 miles northwest on Highway 90, 1.2 miles north, 0.1 mile southwest, and 50 feet east in rangeland. USGS Waelder topographic quadrangle, lat. 29 degrees 43 minutes 02 seconds N. and long. 97 degrees 20 minutes 57 seconds W.

A—0 to 12 inches; very pale brown (10YR 7/3) fine sand, pale brown (10YR 6/3) moist; single grain; loose; many fine and medium roots, few coarse roots; moderately acid; clear smooth boundary.

C1—12 to 54 inches; very pale brown (10YR 8/3) fine sand, very pale brown (10YR 7/3) moist; single grain, loose; few thin yellowish brown (10YR 5/4) coatings on sand grains; moderately acid, gradual smooth boundary.

C2—54 to 80 inches; very pale brown (10YR 8/4) fine sand, very pale brown (10YR 8/3) moist; single grain; loose, few thin yellowish brown (10YR 5/4) coatings on sand grains; moderately acid.

Depth of the sand exceeds 80 inches. Texture is fine sand throughout. Reaction ranges from very strongly acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 5 to 7, and chroma of 2 or 3.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 3 or 4. Most pedons contain few thin brownish coatings on sand grains.

Arol Series

The Arol series consists of moderately deep, nearly level and very gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in weakly cemented clayey tuff. Slope ranges from 1 to 3 percent. Soils of the Arol series are fine, smectitic, thermic Udic Paleustalfs.

Typical pedon of Arol fine sandy loam, 1 to 3 percent slopes; 2.2 miles southwest of Gonzales, from the intersection of Texas Highway 97 and Farm Road 1116, 10.3 miles southwest on Farm Road 1116, 1 mile southeast, and 100 feet north in rangeland. USGS Cheapside topographic quadrangle; lat. 29 degrees 19 minutes 27 seconds N. and long. 97 degrees 17 minutes 44 seconds W.

A—0 to 6 inches; grayish brown (10YR 5/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, friable; many fine and common medium roots; common fine pores; few pebbles; slightly acid; abrupt smooth boundary.

Bt1—6 to 20 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; common fine roots; few pressure faces; few clay films on faces of peds; few fine distinct dark yellowish brown (10YR 4/4) masses of iron-manganese along root channels; neutral; gradual smooth boundary.

Bt2—20 to 29 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure; extremely hard, extremely firm; common fine roots; few distinct clay films on faces of peds; few fine distinct dark yellowish brown (10YR 4/4) masses of iron on peds surfaces; neutral; gradual smooth boundary.

BC—29 to 38 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; weak medium and coarse subangular blocky structure; very hard, very firm; common fine roots; 2 percent fine masses of calcium carbonate; few fine irregular crystals of gypsum; few white weakly cemented siltstone fragments; strongly effervescent; neutral; abrupt smooth boundary.

Cr—38 to 80 inches; pale yellow (2.5Y 8/2) weakly cemented siltstone with silt loam texture, light gray (2.5Y 7/2) moist; massive, very hard, very firm, 2 percent fine masses of calcium carbonate; few fine irregular crystals of gypsum; strongly effervescent; neutral; clear smooth boundary.

The solum thickness ranges from 20 to 40 inches. The average clay content ranges from 35 to 50 percent. Redoximorphic features are relic or lithochromic.

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. Reaction is strongly acid to slightly acid.

The upper part of the Bt horizon has hue of 10YR, value of 2 or 3, and chroma of 1. The lower part of the Bt horizon has hue of 10YR, value of 3 or 4, and chroma of 1. Texture is clay loam or clay. Masses of iron in shades of red, yellow, and brown, range from few to common. Iron depletions in shades of gray range from few to common. Pressure faces range from none to few. Reaction ranges from moderately acid to slightly alkaline.

The BC horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or 3. Texture is clay. Concretions and masses of calcium carbonate range from 0 to 3 percent. Crystals of gypsum range from none to few. Reaction ranges from slightly acid to slightly alkaline.

The Cr horizon has hue of 10YR or 2.5Y, value of 6 to 8, and chroma of 2 or 3. The Cr layer ranges from clayey tuff to siltstone with a silt loam, sandy clay loam, or clay loam texture. When moist, the Cr layer may be dug with a spade. Reaction is neutral or slightly alkaline. Some pedons are calcareous.

Axtell Series

The Axtell series consists of very deep, very gently sloping to strongly sloping, moderately well drained, very slowly permeable soils on stream terraces and stream terrace remnants. These soils formed in acid to alkaline clayey sediments. Slope ranges from 1 to 12 percent. Soils of the Axtell series are fine, smectitic, thermic Udertic Paleustalfs.

Typical pedon of Axtell gravelly fine sandy loam, 3 to 5 percent slopes; from the intersection of U.S. Highway 183 and Farm Road 2067, 1.2 miles southeast on U.S. Highway183, and 200 feet east in pasture. USGS Hochheim topographic quadrangle; lat. 29 degrees 21 minutes 9 seconds N. and long. 97 degrees 19 minutes 53 seconds W.

A—0 to 9 inches; brown (10YR 5/3) gravelly fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable; many very fine and common fine and medium roots; 25 percent siliceous pebbles; slightly acid; abrupt wavy boundary.

Bt—9 to 23 inches; red (2.5YR 4/6) clay, dark red (2.5YR 3/6) moist; moderate medium subangular blocky structure that forms wedge-shaped aggregates; very hard, firm; few fine and medium roots; few cracks that are ¼ inch wide; few pressure faces; few clay films on faces of peds; common medium prominent pale brown (10YR 6/3) and few fine prominent yellowish brown (10YR 5/6) masses of iron in ped interiors; 4 percent siliceous pebbles; strongly acid; clear wavy boundary.

Btss1—23 to 45 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; moderate medium subangular blocky structure; very hard, firm; common medium roots; few cracks ¼ inch wide; common slickensides and few pressure faces; common clay films on faces of peds; common medium prominent red (2.5YR 4/6) masses of iron in ped interiors; 3 percent siliceous pebbles; moderately acid; clear wavy boundary.

Btss2—45 to 63 inches; pale brown (10YR 6/3) clay, brown (10YR 5/3) moist; moderate medium subangular blocky structure; very hard, firm; few fine roots; few slickensides and pressure faces; few clay films on faces of peds; few fine prominent dark yellowish brown (10YR 4/6) masses of iron in ped interiors; 2 percent siliceous pebbles; slightly acid; gradual wavy boundary.

BCk—63 to 80 inches; very pale brown (10YR 8/2) clay loam, light gray (10YR 7/2) moist; moderate fine subangular blocky structure; hard, firm; few fine roots; 5 percent fine masses of calcium carbonate; 5 percent gray interbedded fragments of shale; few fine distinct pale yellow (2.5Y 7/4) and few fine prominent strong brown (7.5YR 4/6) masses of iron in ped interiors; neutral.

The solum thickness is more than 80 inches. The boundary between the A and Bt horizon is abrupt over the subsoil crests and clear over the subsoil troughs and the texture change is abrupt. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches. The control section is clay with a content of clay ranging from 35 to 55 percent. Slickensides and pressure faces range from few to common in the upper 45 inches of the subsoil. The solum contains 1 to 8 percent siliceous pebbles, with siliceous pebbles ranging from 15 to 30 percent on and in the surface layer.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. The E horizon, where present, is 1 to 2 units of value higher than the A horizon. Reaction ranges from strongly acid to slightly acid.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. Texture is clay or clay loam, Masses of iron in shades of red, yellow, and brown range from few to common. Iron depletions in shades of gray range from few to common. Reaction ranges from very strongly acid to slightly acid.

The Btss horizon has hue of 2.5YR to 10YR, value of 5 to 7, and chroma of 2 to 6. Texture is clay or clay loam. Masses of iron in shades of red, yellow, and brown range from few to common. Iron depletions in shades of gray range from few to common. Reaction ranges from very strongly acid to slightly acid.

The BCk or BC horizon, where present, has colors in shades of gray or brown. The texture is clay loam, sandy clay loam, or clay. Concretions of calcium carbonate and crystals of gypsum range from 0 to 5 percent. Shale fragments range from 0 to 5 percent. Reaction ranges from moderately acid to moderately alkaline.

Benchley Series

The Benchley series consists of very deep, very gently sloping, moderately well drained, slowly permeable soils on uplands. These soils formed in clayey marine sediments. Slope ranges from 1 to 3 percent. Soils of the Benchley series are fine, smectitic, thermic, Udertic Argiustolls.

Typical pedon of Benchley clay loam, 1 to 3 percent slopes; from the intersection of Farm Road 1682 and Texas Highway 97 in Bebe, 0.2 mile east on county road, and 1,000 feet south in pasture; USGS Leesville topographic quadrangle; lat. 29 degrees 24 minutes 46 seconds N. and long. 97 degrees 37 minutes 49 seconds W.

A—0 to 6 inches; dark brown (10YR 3/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; hard, friable; common very fine and fine roots; common fine pores; neutral; clear smooth boundary.

Bt1—6 to 14 inches; dark brown (7.5YR 3/2) clay loam, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable; common very fine and fine roots; common fine and medium pores; few pressure faces; few clay films on faces of peds; common fine prominent reddish brown (2.5YR 5/4) masses of iron in ped interiors; 2 percent ironstone pebbles; neutral; abrupt smooth boundary.

Bt2—14 to 19 inches; dark brown (10YR 3/3) clay, dark brown (10YR 3/3) moist; moderate fine and medium angular blocky structure that form wedge-shaped aggregates; hard, firm; common very fine and few fine roots; few fine and medium pores; few cracks ¼ to ½ inch wide with very dark gray grayish brown material; common pressure faces; few clay films on faces of peds; common fine distinct yellowish red (5YR 4/6) and few fine distinct yellowish brown (10YR 5/4) masses of iron in ped interiors; 5 percent ironstone pebbles; neutral; gradual wavy boundary.

Btss1—19 to 33 inches; dark yellowish brown (10YR 4/6) clay, dark yellowish brown (10YR 4/6) moist; moderate medium and coarse angular blocky structure; very hard, very firm; few fine roots; few fine and medium pores; few slickensides and pressure faces; few cracks ½ inch wide with strong brown materials; common fine faint yellowish brown (10YR 5/4) masses of iron along faces of peds; 2 percent ironstone pebbles; neutral; gradual wavy boundary.

Btss2—33 to 49 inches; yellowish brown (10YR 5/8) clay, yellowish brown (10YR 5/8) moist; moderate prismatic structure parting to coarse angular blocky; very hard, very firm; few fine roots; few fine and medium pores; few slickensides and pressure faces; few clay films on faces of peds; few fine concretions of calcium carbonate; 2 percent ironstone pebbles; slightly effervescent; slightly alkaline; gradual wavy boundary.

BCtk1—49 to 65 inches; yellowish brown (10YR 5/8) clay loam, yellowish brown (10YR 5/8) moist; weak prismatic structure parting to coarse angular blocky; very hard, very firm; few fine roots; few fine pores; few pressure faces; few clay films on faces of peds; 5 percent fine concretions of calcium carbonate; 6 percent fine masses of calcium carbonate; 5 percent fine concretions of iron-manganese; 2 percent ironstone pebbles; violently effervescent; moderately alkaline; gradual wavy boundary.

BCtk2—65 to 80 inches; strong brown (7.5YR 5/8) clay loam, strong brown (7.5YR 5/6) moist; few fine prominent yellowish red mottles; weak medium angular blocky structure; very hard, very firm; few fine roots; few clay films on faces of peds; 6 percent fine concretions of calcium carbonate; few fine concretions of iron-manganese; 5 percent fragments of ironstone; slightly effervescent; moderately alkaline.

The solum thickness ranges from 60 to more than 80 inches. The clay content of the control section ranges from 40 to 55 percent. Slickensides range from few to common below a depth of 20 inches. When dry, cracks about ½ inch wide are in the argillic horizon and extend to a depth of 12 inches or more. Ironstone pebbles range from 0 to 5 percent throughout.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. Reaction ranges from moderately acid to neutral.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 2 or 3, and chroma of 1 to 3. Texture is clay loam or clay. Reaction ranges moderately acid to neutral. Masses of iron range from none to common in shades of red, yellow, or brown.

The Btss horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 2 to 8. Texture is clay loam or clay. Masses of iron range from none to common in shades of red, yellow, or brown. Some pedons have a mottled matrix of these colors. Reaction ranges from moderately acid to neutral.

The BCtk or BCt horizon has hue of 7.5YR to 5Y, value of 4 to 7, and chroma of 3 to 8. Texture is clay loam or clay. Masses of iron in various colors range from few to common. Gypsum crystals range from none to few. Concretions of calcium carbonate range from 1 to 6 percent. Reaction ranges from slightly acid to moderately alkaline.

The C horizon where present, is horizontally bedded shale soil materials with clay texture. Thin strata of weakly cemented sandstone range from none to few. Colors are mainly in shades of brown, yellow, or olive with or without spots and strata of gray or red. Concretions of calcium carbonate and gypsum crystals range from none to common. Reaction ranges from slightly acid to moderately alkaline.

Bosque Series

The Bosque series consists of very deep, nearly level, well drained, moderately permeable soils on flood plains. These soils formed in loamy, calcareous alluvial sediments. Slope are 0 to 1 percent. Soils of the Bosque series are fine-loamy, mixed, superactive, thermic Cumulic Haplustolls.

Typical pedon of Bosque clay loam, 0 to 1 percent slopes, frequently flooded; about 4 miles north of Gonzales, from the intersection of U.S. Highway 183 and U.S. Highway 90A in Gonzales, 3 miles north along U.S. Highway 183, 1.4 miles west on county road, and 300 feet northwest in pasture. USGS Ottine topographic quadrangle; lat. 29 degrees 32 minutes 15 seconds N. and long. 97 degrees 31 minutes 01 seconds W.

A1—0 to 11 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; weak very fine subangular blocky structure; hard, firm; common fine and medium roots; few vertical threads of calcium carbonate; few fine fragments of snail shells; violently effervescent; slightly alkaline; clear smooth boundary.

A2—11 to 28 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; hard, firm; common fine and medium roots; many fine pores; common wormcasts; few vertical threads of calcium carbonate; violently effervescent; moderately alkaline; gradual smooth boundary.

Bw1—28 to 54 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak moderate subangular blocky structure; hard, firm; common fine and few medium roots; 5 percent vertical threads of calcium carbonate; few fine fragments of snail shells; violently effervescent; moderately alkaline; clear smooth boundary.

Bw2—54 to 80 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; very hard, very firm; few fine roots; 3 percent vertical threads of calcium carbonate; violently effervescent; moderately alkaline.

The solum thickness is 60 to more than 80 inches. The clay content of the control section ranges from 20 to 35 percent. The texture is loam, sandy clay loam, or clay loam. There are thin, discontinuous fine sandy loam or silt loam strata in some pedons. Films and threads of calcium carbonate range from 2 to 15 percent. Reaction is slightly alkaline or moderately alkaline and calcareous.

The A horizons have hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The mollic epipedon ranges from 20 to 50 inches thick.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Few brownish streaks and mottles range from none to few.

The Akb horizon, where present, is below the 10- to 40-inch particle size control section. Texture is clay loam or clay with color as described in the A horizon.

Branyon Series

The Branyon series (fig. 19) consists of very deep, nearly level, moderately well drained, very slowly permeable soils on terraces along the Guadalupe and San Marco Rivers and along some of their large tributaries. These soils formed in calcareous clayey alluvium. Slopes are 0 to 1 percent. Soils of the Branyon series are fine, smectitic, thermic Udic Haplusterts

Typical pedon of Branyon clay, 0 to 1 percent slopes; from the intersection of U.S. Highway 90A and Texas Highway 97 in Gonzales, 4.7 miles east on U.S. Highway 90A, 1.7 miles south on private road, 1 mile east and 3 miles south, and 300 feet east in cropland. USGS Hamon topographic quadrangle; lat. 29 degrees 27 minutes 25 seconds N. and long. 97 degrees 22 minutes 20 seconds W.

Ap—0 to 5 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure; extremely hard, extremely firm; many fine roots; common fine and medium pores; few fine concretions of calcium carbonate; slightly effervescent; slightly alkaline; clear smooth boundary.

Bw—5 to 16 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium angular blocky structure that forms wedge-shaped aggregates; extremely hard, extremely firm; common fine roots; common pressure faces; few fine concretions of calcium carbonate; strongly effervescent; neutral; gradual wavy boundary.

Bss1—16 to 36 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; common fine roots; few ½ to 1 inch wide cracks that extend vertical; common distinct grooved slickensides; few pressure faces; few fine concretions of calcium carbonate; strongly effervescent; neutral; gradual wavy boundary.

Bss2—36 to 59 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few ¼ to ½ inch wide cracks filled with black material; few distinct grooved slickensides; few streaks of very dark gray from above; few fine concretions of calcium carbonate; strongly effervescent; neutral; gradual wavy boundary.

Bss3—59 to 74 inches; gray (10YR 5/1) clay, dark gray (10YR 4/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few distinct grooved slickensides; few fine concretions of calcium carbonate; strongly effervescent; slightly alkaline; gradual wavy boundary.

Bssk—74 to 80 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; moderate medium and coarse subangular blocky structure; extremely hard, extremely firm; few distinct slickensides; 5 percent fine concretions of calcium carbonate; few fine distinct light yellowish brown (10YR 6/4) masses of iron in ped interiors; strongly effervescent; slightly alkaline; gradual wavy boundary.

The solum thickness is more than 80 inches thick. When dry, cracks 1 to 3 inches wide extend from the surface to depths of 20 inches or more. Depth to slickensides or wedge-shaped aggregates ranges from 10 to 20 inches. The clay content in the control section ranges from 40 to 55 percent. Concretions of calcium carbonate range from 1 to 6 percent throughout. Soil is calcareous throughout. Reaction is slightly alkaline or moderately alkaline.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1.

The Bw horizon has hue of 10YR, value of 3 to 5, and chroma of 1.

The Bss horizon has hue of 10YR, value of 3 to 5, and chroma of 1.

The Bssk horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 4. Masses of iron in shades of yellow or brown range from none to few.

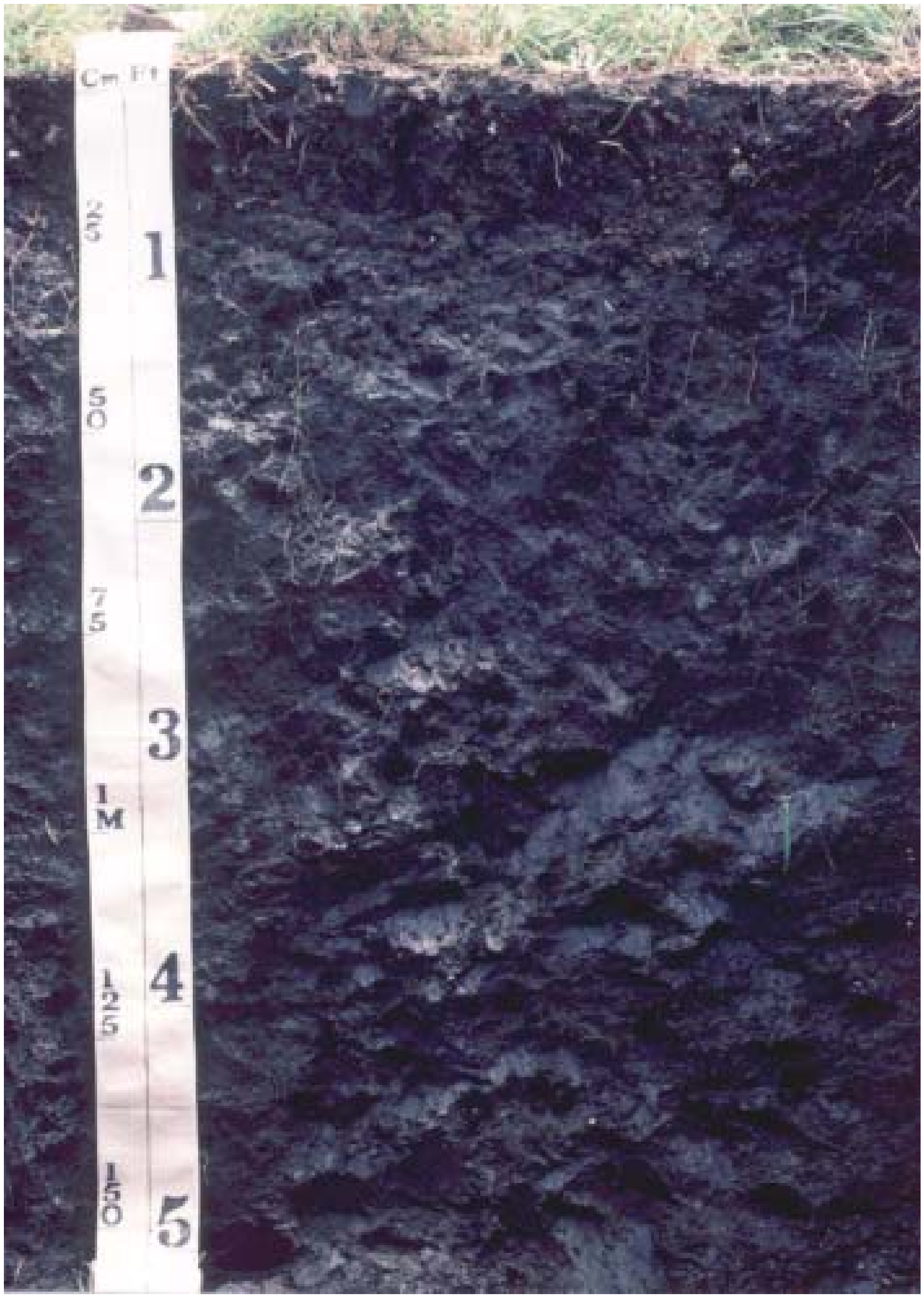

Figure 19.—A profile of Branyon clay, 0 to 1 percent slopes. The texture is clay throughout the profile. The shiny faces observed are slickensides and pressure faces.

Bryde Series

The Bryde series (fig. 20) consists of deep, very gently sloping, well drained, slowly permeable soils on uplands. They formed in loamy and clayey sediments over thinly interbedded weakly cemented sandstone deposits. Slope ranges from 1 to 3 percent. Soils of the Bryde series are fine, smectitic, hyperthermic Vertic Paleustalfs.

Typical pedon of Bryde fine sandy loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 1.1 miles south on

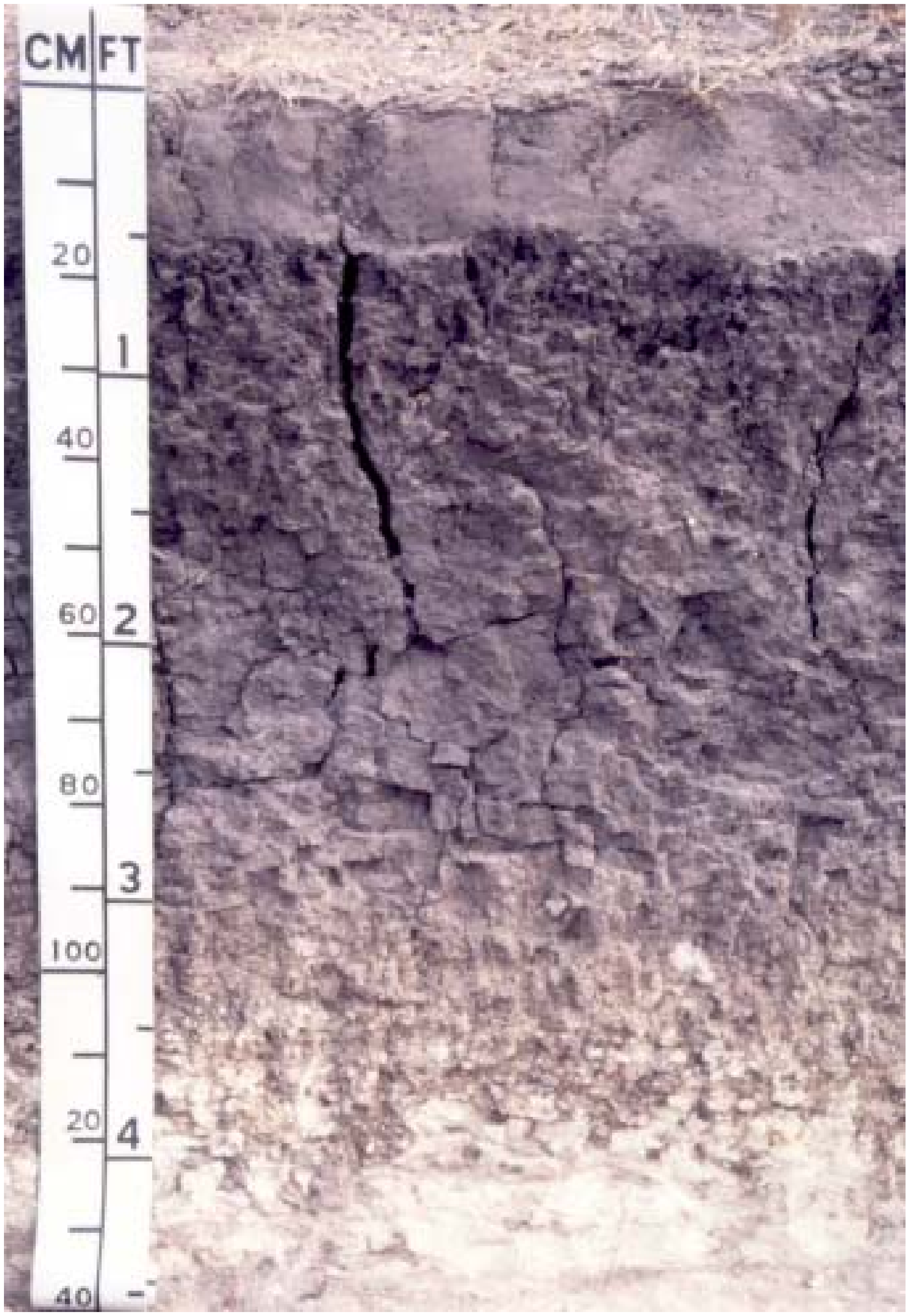

Figure 20.—A profile of Bryde fine sandy loam. The cracks in the subsoil are due to the clayey texture as it dries out. The underlying material, starting at about 55 inches is weakly cemented sandstone.

Farm Road 108, 3.15 miles west on county road, 0.8 mile south on oil field service road, and 50 feet east in rangeland. USGS Bald Mound topographic quadrangle, lat. 29 degrees 12 minutes 35 seconds N. and long. 97 degrees 38 minutes 51 seconds W.

A—0 to 8 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; massive; hard, firm; common fine and few medium roots; few decayed medium roots; few vertical cracks ¼ to 1 inch wide; neutral; abrupt smooth boundary.

Bt—8 to 26 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak fine prismatic structure parting to moderate fine and medium angular blocky structure that forms wedge-shaped aggregates; extremely hard, extremely firm; few fine roots; few vertical cracks ¼ to ½ inch wide with thin coatings of fine sand; common pressure faces; common clay films on faces of peds; slightly alkaline; gradual wavy boundary.

Btk1—26 to 36 inches; dark grayish brown (10YR 4/2) clay, very dark gray (10YR 3/1) moist; weak fine and medium prismatic structure parting to moderate medium angular blocky; extremely hard, extremely firm; few fine roots; few vertical cracks filled with fine sand; few pressure faces; common clay films on faces of peds; 5 percent masses and thin films of calcium carbonate; strongly effervescent; slightly alkaline; gradual wavy boundary.

Btk2—36 to 44 inches; grayish brown (10YR 5/2) sandy clay, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; very hard, very firm; few cracks filled with very dark gray clay; common clay films on faces of peds; few masses and thin films of calcium carbonate; slightly effervescent; slightly alkaline; gradual wavy boundary.

Btk/2Cr—44 to 55 inches; yellowish brown (10YR 5/4) sandy clay, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; very hard, firm; about 30 percent by volume (2Cr) material of weakly cemented sandstone of fine sandy loam texture; few thin seams of dark grayish brown sandy clay loam; few clay films on vertical faces of peds; few thin films of calcium carbonate; few fine prominent brownish yellow (10YR 6/8) masses of iron in interiors of peds; slightly effervescent; slightly alkaline; gradual smooth boundary.

2Cr—55 to 80 inches; light gray (2.5Y 7/2) weakly cemented sandstone that had fine sandy loam texture, white (2.5Y 8/2); massive very hard, friable; few fine prominent brownish yellow (10YR 6/8) mottles; slightly alkaline.

The solum thickness ranges from 40 to 60 inches. Depth to carbonates ranges from 20 to 40 inches. COLE averages between 0.07 and 0.13 in the Bt horizon and the PLE of the upper 50 inches is more than 2.5. Cracks up to 1 inch wide extend to a depth of 20 inches or more. The clay content of the control section ranges from 35 to 45 percent.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Some pedons have up to 2 percent siliceous pebbles. Reaction is slightly acid or neutral.

The Bt horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. Texture is sandy clay or clay. Some pedons have up to 2 percent siliceous pebbles. Reaction is neutral or slightly alkaline.

The Btk horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Texture is clay loam, sandy clay, or clay. Films, concretions, or masses of calcium carbonate range from 1 to 5 percent. Reaction is slightly alkaline or moderately alkaline.

The Btk/2Cr horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4. Texture is sandy clay loam or sandy clay. Masses of iron in shades of yellow or brown range from none to common. Films, concretions or masses of calcium carbonate range from 1 to 8 percent. Reaction is slightly alkaline or moderately alkaline.

The 2Cr horizon has hue of 10YR or 2.5Y, value of 7 or 8, and chroma of 2 to 4. It is weakly cemented sandstone with fine sandy loam texture. The weakly cemented sandstone slakes in water. Masses of iron in shades of yellow and brown range from few to common. Reaction is slightly alkaline or moderately alkaline.

Buchel Series

The Buchel series consists of very deep, nearly level, moderately well drained, very slowly permeable soils on flood plains and low bottomland terraces. These soils developed in clayey calcareous sediments. Slope are 0 to 1 percent. Soils of the Buchel series are fine, smectitic, hyperthermic Typic Haplusterts.

Typical pedon of Buchel clay, 0 to 1 percent slopes, occasionally flooded; from the intersection of U.S. Highway 90A and Texas Highway 97 in Gonzales, 5.7 miles east on U.S. Highway 90A, 4 miles south on county road, and 500 feet northeast in pastureland. USGS Hamon topographic quadrangle; lat. 29 degrees 26 minutes 45 seconds N. and long. 19 degrees 19 minutes 24 seconds W.

A—0 to 17 inches; very dark gray (10YR 3/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; many very fine and many fine roots; few cracks ¼ to 1 inch wide; few pressure faces; few fragments of snail shells; few brown root stains; few wormcasts; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bss1—17 to 40 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; many very fine and common fine roots; few ¼ to ½ inch wide cracks, common slickensides; few fragments of snail shells; few wormcasts; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bss2—40 to 63 inches; grayish brown (10YR 5/2) clay, dark gray (10YR 4/1) moist; moderate medium and coarse angular blocky structure; extremely hard, extremely firm; common very fine and fine roots; few ½ to 1 inch wide cracks; common slickensides; few fragments of snail shells; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss—63 to 80 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; moderate medium and coarse angular blocky structure; extremely hard, extremely firm; common slickensides; 5 percent fine masses of calcium carbonate; few fine brown (10YR 4/3) masses of iron-manganese on faces of peds; violently effervescent; moderately alkaline.

The solum thickness is more than 80 inches. Texture is clay throughout. The clay content ranges from 40 to 60 percent. Reaction is slightly or moderately alkaline. When dry, cracks ¼ to 1 inch wide extend to a depth of 20 inches or more. Depth to slickensides or wedge-shaped aggregates ranges from 10 to 20 inches.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Some pedons have an Ap horizon of similar colors.

The Bss horizon has a hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Masses of iron in shades of brown range from none to few. Some pedons have a Bw horizon just below the A and above the Bss that has similar colors.

The Bkss horizon has a hue of 10YR, value of 4 to 6, and chroma of 2 to 3. Masses and threads of calcium carbonate range from 2 to 10 percent. This horizon has few dark brown iron-manganese masses.

Burlewash Series

The Burlewash series consists of moderately deep, very gently sloping to strongly sloping, well drained, very slowly permeable soils on uplands. These soils formed in materials weathered form tuffaceous sandstone or siltstone. Slope ranges from 1 to 12 percent. Soils of the Burlewash series are fine, smectitic, thermic Ultic Paleustalfs.

Typical pedon of Burlewash fine sandy loam, 3 to 5 percent slopes eroded; from the intersection of U.S. Highway 90 and Farm Road 1680 in Waelder, 8.9 miles southeast on Farm Road 1680, 2.5 miles southwest on county road, and 100 feet south in rangeland. USGS Moulton topographic quadrangle; lat. 29 degrees 35 minutes 44 seconds N. and long. 97 degrees 13 minutes 50 seconds W.

A—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; hard, friable; common very fine and fine roots; very strongly acid; abrupt smooth boundary.

Bt1—4 to 25 inches; red (2.5YR 5/6) sandy clay, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; very hard, very firm; common very fine and fine roots; few clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—25 to 29 inches; light reddish brown (2.5YR 6/4) sandy clay loam, reddish brown (2.5YR 5/4) moist; moderate fine subangular blocky structure; very hard, very firm; common very fine and few coarse roots; few clay films on faces of peds; few white sandstone fragments; strongly acid; abrupt smooth boundary.

Cr—29 to 80 inches; very pale brown (10YR 8/2) weakly cemented thinly bedded sandstone that had fine sandy loam texture, light gray (10YR 7/2) moist; massive; very hard, very firm; strongly acid.

The solum thickness ranges from 20 to 40 inches and corresponds to the depth of a paralithic contact with tuffaceous sandstone or siltstone. The clay content in the control section ranges from 40 to 55 percent. The base saturation of the argillic horizon ranges from 50 to 70 percent. The content of siliceous pebbles ranges from 0 to 20 percent in the surface layer.

The A horizon has hue of 10YR, value of 5 to 7, and chroma of 2 or 3. Texture is fine sandy loam or gravelly fine sandy loam. Reaction ranges from very strongly acid to moderately acid.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 2 to 6. Texture is sandy clay or clay. Masses of iron in shades of brown, yellow, or red range from none to few. Reaction ranges from extremely acid to strongly acid.

The BCt horizon where present has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 or 3. Texture is sandy clay loam, clay loam, or clay. Masses of iron in shades of brown, yellow, or red range from none to few. Reaction is very strongly acid or strongly acid.

The Cr horizon consists of interbedded of tuffaceous siltstone, sandstone, and tuffaceous clay, stratified with layers of fine sandy loam. Colors are variable with shades of gray, brown, and yellow predominating. The reaction is very strongly acid or strongly acid.

Cadell Series

The Cadell series consists of soils that are deep to weathered shale. They are very gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in tuffaceous alkaline clayey sediments interbedded with loamy and shale materials. Slope ranges from 1 to 3 percent. Soils of the Cadell series are fine, smectitic, thermic Aquertic Paleustalfs.

Typical pedon of Cadell fine sandy loam, 1 to 3 percent slopes; from the intersection of Texas Highway 97 and Farm Road 1116, 8.7 miles south on Farm Road 1116, 0.4 mile west on county road, and 100 feet south in pastureland. USGS Cheapsides topographic quadrangle; lat. 29 degrees 20 minutes 53 seconds N. and long. 97 degrees 29 minutes 34 seconds W.

A—0 to 5 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, friable; common very fine and few fine roots; few wormcasts; neutral; abrupt wavy boundary.

Bt1—5 to 16 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; weak medium prismatic structure parting to moderate medium angular blocky; very hard, very firm; common very fine roots; few clay films on faces of peds; few fine stains of iron; few fine concretions of calcium carbonate; few fine prominent olive yellow (2.5Y 6/6) and strong brown (7.5YR 5/6) masses of iron along faces of peds; few chert pebbles; slightly alkaline; clear smooth boundary.

Bt2—16 to 28 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; moderate medium prismatic structure parting to weak medium angular blocky; very hard, very firm; common very fine and fine roots; few clay films on faces of peds; few fine and medium concretions of calcium carbonate; few masses of calcium carbonate on faces of peds in lower part of layer; few fine concretions of iron-manganese; common fine distinct yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/8) masses of iron along faces of peds; few fine distinct gray (10YR 5/1) iron depletions along root channels; slightly effervescent; slightly alkaline; gradual smooth boundary.

Bk—28 to 47 inches; pale yellow (2.5Y 7/4) clay, light yellowish brown (2.5Y 6/4) moist; moderate medium angular blocky structure; very hard, very firm; few very fine roots; 5 percent fine and medium concretions of calcium carbonate; 4 percent masses of calcium carbonate on faces of peds; few medium prominent dark reddish brown (2.5YR 3/4) and few fine distinct strong brown (7.5YR 5/8) masses of iron along faces of peds; strongly effervescent; moderately alkaline; gradual smooth boundary.

Bk/C—47 to 55 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; (B); weak medium and coarse subangular blocky structure; extremely hard, extremely firm; few very fine roots; few fine concretions of calcium carbonate; 6 percent calcium carbonate masses on faces of peds; few fine prominent dark reddish brown (5YR 3/3) and few fine distinct strong brown (7.5YR 5/6) masses of iron on faces of peds; weathered shale fragments make up 23 percent of the lower part (C); strongly effervescent; moderately alkaline; gradual smooth boundary.

2Ck—55 to 80 inches; light gray (2.5Y 7/2) interbedded shale that had clay texture, light gray (2.5Y 7/2) moist; few medium prominent olive yellow (2.5Y 6/8) and few fine prominent reddish brown mottles; massive; extremely hard, extremely firm; 6 percent masses of calcium carbonate; few fine crystals of gypsum; slightly effervescent; moderately alkaline.

The solum thickness ranges from 40 to about 60 inches. The clay content in the control section ranges from 35 to 50 percent. Depletions of iron from wetness are within a depth of 20 to 30 inches of the soil surface. The exchangeable sodium ranges from 3 to 6 percent in the upper 16 inches of the argillic horizon. Depth to concretions and masses of calcium carbonates ranges from 16 to 24 inches.

The A horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3. Reaction is slightly acid or neutral.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 or 3. Texture is clay loam or clay. Masses of iron in shades of red, yellow, or brown and iron depletions in shades of gray range from few to common. Reaction is slightly acid to slightly alkaline.

The Bk or Btk horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. Texture is clay loam or clay. Masses of iron in various shades of brown range from none to few. Masses and concretions of calcium carbonate range from 1 to 8 percent. Texture is clay loam or loam. Reaction is slightly alkaline or moderately alkaline.

The Bk/C horizon, where present, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. Texture is clay loam, silty clay loam, or clay. Masses of iron in shades of red or brown range from none to few. Masses and concretions of calcium carbonate range from 1 to 5 percent. Shale fragments range from 20 to 30 percent. Reaction is slightly alkaline or moderately alkaline.

The 2C horizon has hue of 2.5Y, value of 7, and chroma of 2. It is tuffaceous material consisting of clays and sandstone. It has mottles in shades of red or brown. Crystals of gypsum range from none to few. Concretions and masses of calcium carbonate range from 1 to 6 percent. Reaction is slightly alkaline or moderately alkaline.

Carbengle Series

The Carbengle series consists of moderately deep, very gently sloping to strongly sloping, well drained, moderately permeable soils on uplands. These soils formed in residuum from weakly cemented calcareous sandstone. Slope ranges from 1 to 12 percent. Soils of the Carbengle series are fine-loamy, carbonatic, thermic Udic Calciustolls.

Typical pedon of Carbengle loam, 3 to 5 percent slopes; from the intersection of U.S. Highway 183 and U.S. Highway 90A in Gonzales, 12.5 miles east on U.S. Highway 90A, 1.7 miles south on Farm Road 443, 0.2 miles southeast on county road, 8 miles east, and 200 feet south of road in rangeland. USGS Shiner topographic quadrangle; lat. 29 degrees 26 minutes 15 seconds N. and long. 97 degrees 14 minutes 59 seconds W.

A—0 to 13 inches; dark gray (10YR 4/1) loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure; slightly hard, friable; common very fine and fine roots; few fine wormcasts; few fine fragments of snail shells; strongly effervescent; 1 percent sandstone gravel; moderately alkaline; clear smooth boundary.

Bk1—13 to 27 inches; light grayish brown (10YR 6/2) loam, grayish brown (10YR 5/2) moist; weak fine subangular blocky structure; slightly hard, friable; common very fine and fine roots; few fine concretions of calcium carbonate; 40 percent very fine concretions and masses of calcium carbonate; few fine fragments of snail shells; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk2—27 to 38 inches; very pale brown (10YR 7/4) silty clay loam, light yellowish brown (10YR 6/4) moist; weak fine subangular blocky structure; slightly hard, friable; common very fine and fine roots; few fine concretions of calcium carbonate; 45 percent very fine threads of calcium carbonate; few fine fragments of snail shells; violently effervescent; moderately alkaline; clear smooth boundary.

Cr—38 to 80 inches; very pale brown (10YR 8/4) weakly cemented sandstone that has silty clay loam texture, very pale brown (10YR 7/4) moist; few fine distinct yellowish brown mottles; massive; very hard, firm; few very fine roots; common seams with interbedded loamy and sandy material; few very fine masses of calcium carbonate; few cemented fragments of sandstone; violently effervescent; moderately alkaline.

The solum thickness and depth to weathered bedrock range from 20 to 40 inches. The clay content in the control section ranges from 20 to 35 percent. Secondary carbonates are present throughout the B horizon in the form of masses, threads, and concretions. Calcium carbonate equivalent ranges from 40 to 65 percent.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 1 to 3.

The Bk1 horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 2 to 6. Texture is loam, clay loam, or silty clay loam.

The Bk2 horizon has hue of 7.5YR to 2.5Y, value of 6 to 8, and chroma of 2 to 6. Texture is silty clay loam, loam, or clay loam. Masses of iron in shades of brown or yellow range from none to common.

The Cr horizon ranges from calcareous weakly cemented to strongly cemented sandstone that is interbedded with loamy material. It can be cut with a spade or auger. Roots penetrate only in occasional fractures and in loamy interbedded material.

Chazos Series

The Chazos series consists of very deep, nearly level and very gently sloping, moderately well drained, slowly permeable soils on high stream terraces. These soils formed in clayey sediments. Slope ranges from 0 to 3 percent. Soils of the Chazos series are fine, smectitic, thermic Udic Paleustalfs.

Typical pedon of Chazos loamy fine sand, 0 to 1 percent slopes; from the intersection of U.S. Highway 90A and Texas Highway 97 in Gonzales, 5.1 miles east on U.S. Highway 90A, 1.2 miles south on private road, and 100 feet east in pastureland. USGS Gonzales South topographic quadrangle; lat. 29 degrees 28 minutes 40 seconds N. and long. 97 degrees 22 minutes 44 seconds W.

A—0 to 7 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 5/3) moist; weak fine subangular blocky structure parting to weak fine granular; loose, very friable; many very fine, fine and medium roots; many fine pores; few krotovinas; moderately acid; clear smooth boundary.

E—7 to 11 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; weak fine subangular blocky structure parting to weak fine granular; loose, very friable; common very fine and medium roots; many fine pores; few krotovinas; moderately acid; abrupt smooth boundary.

Bt1—11 to 22 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to moderate fine and medium angular blocky; extremely hard, extremely firm; common very fine roots; common fine pores; few pressure faces; few clay films on faces of peds; common fine and medium prominent yellowish red (5YR 4/6), red (2.5YR 4/6) and distinct brownish yellow (10YR 6/6) iron masses in ped interiors; few fine faint grayish brown (10YR 5/2) iron depletions on faces of peds; moderately acid; clear smooth boundary.

Bt2—22 to 38 inches; pale brown (10YR 6/3) sandy clay, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate medium angular blocky; extremely hard, extremely firm; few very fine roots; few fine pores; few krotovinas; few siliceous pebbles; few clay films on faces of peds; common fine and medium prominent yellow (2.5Y 7/6) iron masses in ped interiors; slightly acid; gradual smooth boundary.

Bt3—38 to 51 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; very hard, very firm; few very fine roots; few fine pores; few clay films on faces of peds; few distinct organic coats on faces of peds; few fine irregular very dark brown (10YR 2/2) masses of iron-manganese; few fine concretions of calcium carbonate; common fine and medium prominent yellow (10YR 7/8) and few fine prominent strong brown (7.5YR 5/8) iron masses with sharp boundaries in the matrix; neutral; gradual smooth boundary.

Btk—51 to 66 inches; light gray (2.5Y 7/2) clay loam, light brownish gray (2.5Y 6/2) moist; weak coarse subangular blocky structure; very hard, very firm; few clay films on faces of peds; few very dark brown (10YR 2/2) stains of iron-manganese; 3 percent fine and medium masses and concretions of calcium carbonate; common fine and medium prominent strong brown (7.5YR 5/8) iron masses on faces of peds; slightly effervescent; neutral; clear smooth boundary.

BCt—66 to 80 inches; pale yellow (5Y 8/2) clay loam, light gray (5Y 7/2) moist; weak coarse subangular blocky structure; extremely hard, extremely firm; few clay films on faces of peds; few medium and coarse masses and concretions of calcium carbonate; common fine very dark brown (10YR 2/2) stains of iron-manganese; common fine prominent strong brown (7.5YR 5/6) iron masses in matrix of peds; slightly effervescent; neutral.

The solum thickness is more than 80 inches. The clay content in the control section ranges from 35 to 48 percent. The content of siliceous pebbles range from 0 to 5 percent.

The A horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3. Reaction ranges from moderately acid to neutral.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. The reaction ranges from moderately acid to neutral.

The upper Bt horizon has hue of 10YR, value of 4 to 6, and chroma of 4 to 8. Texture is sandy clay or clay. Masses of iron in shades of red, brown, or yellow and iron depletions in shades of gray range from few to common. Calcium carbonate masses or concretions range from none to few. Reaction ranges from moderately acid to neutral.

The lower Bt horizons have hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 to 6. Texture is sandy clay loam or sandy clay. Masses of iron in shades of red, brown, yellow, and gray iron depletions range from few to common. Calcium carbonate masses or concretions range from none to few. Reaction ranges from moderately acid to neutral.

The Btk horizon has hue of 10YR or 2.5Y, value of 5 to 7, chroma of 2 to 8. Texture is sandy clay loam, clay loam, or clay. Masses of iron in shades of yellow or brown range from few to common. Iron depletions in shades of gray range from few to common. Calcium carbonate masses and concretions range from 1 to 4 percent. Reaction is slightly alkaline or moderately alkaline.

The BCt horizon has hue of 10YR to 5Y, value of 6 or 7, and chroma of 2 to 6. Texture is sandy clay loam or clay loam. Masses of iron in shades of red, yellow, or brown range from few to common. Iron depletions in shades of gray range from few to common. Reaction ranges from neutral to moderately alkaline.

Conquista Series

The Conquista series consists of very deep, very gently sloping to steep, well drained, very slowly permeable soils on uplands. These soils are reclaimed mine soils. These soils are forming from loamy materials that have been reconstructed from uranium mining operations. Slope ranges from 1 to 40 percent. Soils of the Conquista series are fine-loamy, mixed, superactive, hyperthermic Entic Haplustolls.

Typical pedon of Conquista clay, 20 to 40 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.1 miles south on Farm Road 108, 1 mile southwest on County Road, 1.4 miles west, and 300 feet south about two-thirds up on slope of mound. USGS Bald Mound topographic quadrangle; lat. 29 degrees 09 minutes 50 seconds N. and the long. 97 degrees 38 minutes 10 seconds W.

Ap—0 to 11 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure; very hard, very firm; common fine and few medium roots; 30 percent dark gray (10YR 4/1) clay mixed throughout; few fine concretions of calcium carbonate; few siliceous pebbles; few fragments of sandstone; slightly alkaline; abrupt wavy boundary.

2C—11 to 80 inches; pale yellow (2.5Y 8/2) loam, light gray (2.5Y 7/2) moist; few fine distinct yellow (2.5Y 7/6) mottles; massive; slightly hard, friable; few fine roots in the upper part; 4 percent fragments of siltstone, moderately alkaline.

Rooting depth is more than 80 inches. The clay content of the control section ranges from 18 to 35 percent.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. Masses or concretions of calcium carbonate range from 1 to 6 percent. Siliceous pebbles range from none to few. Reaction is slightly alkaline or moderately alkaline.

The 2C horizon has hue of 10YR or 2.5Y, value of 6 to 8, chroma of 2 to 4. Texture is loam, sandy clay loam, or their gravelly counterparts. Masses of iron in shades of yellow or brown range from none to few. The 2C horizon consists of 5 to 35 percent fragments of weakly to strongly cemented sandstone or siltstone. Reaction is slightly alkaline or moderately alkaline.

Cost Series

The Cost series (fig. 21) consists of very deep, nearly level, somewhat poorly drained, very slowly permeable soils on low stream terraces. These soils formed in saline, stratified, sandy and loamy alluvium. These soils are on nearly level low stream terraces. Slope are 0 to 1 percent. Soils in the Cost series are clayey over sandy or sandy-skeletal, smectitic, hyperthermic Typic Natraqualfs

Typical pedon of Cost loamy fine sand, 0 to 1 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 1116 about 4 miles southeast of Smiley, 6.6 miles north on Farm Road 1116, 0.2 miles west, and 1,000 feet north in rangeland. USGS Pilgrim topographic quadrangle; lat. 29 degrees 19 minutes 09 seconds N. and long. 97 degrees 32 minutes 38 seconds W.

A—0 to 3 inches; very pale brown (10YR 8/2) loamy fine sand, light gray (10YR 7/2) moist; weak fine subangular blocky structure; hard, very friable; many very fine and fine roots; many fine pores; few salt crystals on surface; slightly saline; moderately alkaline; abrupt smooth boundary.

Btnzg1—3 to 9 inches; gray (10YR 5/1) clay loam, dark gray (10YR 4/1) moist; moderate coarse columnar structure parting to moderate medium and coarse angular blocky; very hard, firm; many very fine and fine roots; common fine and medium pores; few clay films on vertical faces of columns; few very dark gray (10YR 3/1) organic coatings on faces of peds; common fine and medium distinct black (10YR 2/1) and common fine distinct very dark grayish brown (10YR 3/2) iron-manganese masses in ped interiors; strongly saline; strongly alkaline; clear smooth boundary.

Btnzg2—9 to 17 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; weak coarse columnar structure parting to weak coarse angular blocky; hard, friable; many fine roots; common fine and medium pores; few clay films on vertical faces of peds; common fine distinct dark yellowish brown (10YR 4/4) iron masses in interiors peds; strongly saline; strongly alkaline; clear smooth boundary.

Btnzg3—17 to 30 inches; light brownish gray (2.5Y 6/2) clay, grayish brown (2.5Y 5/2) moist; weak coarse angular blocky structure; hard, friable; common fine and medium pores; clay films on vertical faces of peds; few fine concretions of silica; common fine and medium distinct brown (10YR 4/3) iron masses in interiors of peds; few fine distinct gray (10YR 5/1) iron depletions in interiors of peds; strongly saline; strongly alkaline; clear smooth boundary.

2Bnzg1—30 to 48 inches; light gray (10YR 7/2) fine sand, light brownish gray (10YR 6/2) moist; weak medium subangular blocky structure; hard, very friable; common fine and medium pores; common coarse distinct brown (10YR 4/3) iron-manganese masses on faces of peds; strongly saline; very strongly alkaline; abrupt smooth boundary.

2Bnzg2—48 to 60 inches; light brownish gray (10YR 6/2) loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; hard, friable; common very fine and fine pores; few fine brown (10YR 4/3) iron-manganese masses on faces of peds and in pore linings along root channels; common fine and medium distinct yellowish brown (10YR 5/6) iron masses and black (10YR 2/1) manganese masses in interiors of peds; common fine black (10YR 2/1) concretions of iron-manganese between peds; strongly saline; strongly alkaline; abrupt wavy boundary.

3Cnzg—60 to 80 inches; greenish gray (5GY 6/1) fine sand, greenish gray (5GY 5/1) moist; single grain; slightly hard, very friable; common fine distinct grayish green (5G 4/2) iron depletions along faces of peds; few fine concretions of calcium carbonate; strongly saline; strongly alkaline.

Figure 21.—A profile of Cost loamy fine sand, 0 to 1 percent slopes, occasionally flooded. The subsoil contains a significant amount of sodium which can be toxic to most plants.

The solum thickness ranges from 60 to 80 inches. Electrical conductivity ranges from 12 to 35 dS/m. The exchangeable sodium percent is more than 75 percent throughout the control section. Sodium Absorption Ratio (SAR) is more than 100 throughout the pedon. Strongly contrasting particle size classes occur within the control section of these soils. Weighted average clay content of the upper part of the control section ranges from 35 to 50 percent. Weighted average clay content of the lower part ranges from 5 to 25 percent. Reaction ranges from moderately alkaline to very strongly alkaline. The soil has aquic conditions in most years within 20 inches of the soil surface.

The A horizon has hue of 10YR, value of 4 to 8, and chroma of 1 to 4. Iron and manganese masses range from none to few in shades of red, yellow, or brown. Iron depletions in shades of gray range from none to few.

The Btnzg horizon has hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 2 or less. Texture is clay loam or clay with clay content ranging from 35 to 45 percent. Iron masses in shades of red, yellow, or brown range from none to common. Iron depletions in shades of gray range from none to few. Iron-manganese in the form of stains and concretions range from none to common. Concretions of calcium carbonate range from none to few. The horizon contains a few silica concretions.

The 2Bnzg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. Texture ranges from fine sand to loam. Iron and manganese masses in shades of yellow, brown, or black range from few to common. Iron depletions in shades of gray range from few to common. Iron-manganese and silica concretions range from few to none.

The 3Cnzg horizon has hue of 10YR, 2.5Y, 5GY or 5B, or is neutral, value of 5 to 7, and chroma of 2 or less. Texture is loamy sand, loamy fine sand, or fine sandy loam with thin lenses of clayey materials.

Iron masses in shades of yellow or brown and range from few to common. Iron depletions in shades of gray range from few to common. Clayey seams or pockets range from none to common. Iron manganese and silica concretions range from none to common.

Coy Series

The Coy series consists of very deep, very gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in calcareous clayey marine shale. Slope ranges from 1 to 3 percent. Soils of the Coy series are fine, smectitic, hyperthermic Vertic Argiustolls.

Typical pedon of Coy clay loam, 1 to 3 percent slopes; from the intersection of U.S. 87 and Farm Road 108 in Smiley, 8.1 miles south on Farm Road 108, 1.9 miles southwest on county road, 1.9 miles southeast, and 300 feet east in pastureland. USGS Sample topographic quadrangle; lat. 29 degrees 07 minutes 52 seconds N. and long. 97 degrees 35 minutes 36 seconds W.

A—0 to 7 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; very hard, very firm; common fine roots; few worm channels; common cracks ¼ to ½ inch wide; few fine concretions of calcium carbonate; few fine fragments of snail shells; very slightly effervescent; moderately alkaline; clear smooth boundary.

Bt—7 to 29 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure that forms wedge-shaped aggregates; extremely hard, extremely firm; few fine roots; few vertical cracks ¼ to ½ inch wide; common clay films on faces of peds; few fine concretions of calcium carbonate; very slightly effervescent; moderately alkaline; gradual wavy boundary.

Btk—29 to 44 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few fine roots; few vertical cracks filled with very dark gray clay; few clay films on faces of peds; few fine concretions of calcium carbonate; 5 percent masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bky—44 to 62 inches; brownish yellow (10YR 6/6) clay, brownish yellow (10YR 6/6) moist, weak medium subangular blocky structure; extremely hard, extremely firm; few vertical cracks filled with very dark gray clay; 10 percent masses of calcium carbonate; few crystals of gypsum; strongly effervescent; moderately alkaline; gradual wavy boundary.

BCky—62 to 80 inches; brownish yellow (10YR 6/6) clay, brownish yellow (10YR 6/6) moist; weak medium and coarse subangular blocky structure; extremely hard, extremely firm; 5 percent masses of calcium carbonate; 5 percent crystals of gypsum; few fragments of shale; strongly effervescent; moderately alkaline.

The solum thickness ranges from 60 to more than 80 inches. Cracks up to 1 inch wide extend to more than 20 inches in depth. The clay content of the control section ranges from 40 to 50 percent. Reaction is moderately alkaline throughout.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2.

The Bt horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. Texture is clay loam or clay. Concretions or masses of calcium carbonate range from 0 to 3 percent.

The Btk horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. Texture is clay loam or clay. Concretions or masses of calcium carbonate range from 3 to 6 percent.

The Bky horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 6. Texture is sandy clay or clay. Concretions or masses of calcium carbonate range from 1 to 6 percent. Crystals of gypsum range from 0 to 5 percent. Some pedons have Bk horizons of similar colors and texture. Electrical conductivity ranges from 0 to 2 dS/m.

The BCky horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 6. Texture is silty clay or clay. Masses of calcium carbonate range from 1 to 8 percent. Crystals of gypsum range from 0 to 6 percent. Electrical conductivity ranges 0 to 4 dS/m.

Some pedons have C horizons that are weakly cemented siltstone of clay or silty clay texture below 60 inches.

Crockett Series

The Crockett series consists of soils that are deep to weathered shale. They are very gently sloping and gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in clayey material interbedded with shale. Slope ranges from 1 to 5 percent. Soils of the Crockett series are fine, smectitic, thermic Udertic Paleustalfs.

Typical pedon of Crockett fine sandy loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 90A and Farm Road 304, 10 miles north along Farm Road 304, 1 mile east on county road, 0.6 mile north, 1.55 miles east, and 100 feet north in pastureland; USGS Sandy Fork topographic quadrangle; lat. 29 degrees 38 minutes 52 seconds N. and long. 97 degrees 22 minutes 28 seconds W.

A—0 to 7 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; very hard, friable; many very fine and common fine roots; few pebbles; slightly acid; abrupt smooth boundary.

Bt—7 to 21 inches; yellowish red (5YR 5/6) clay, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure that forms wedge-shape aggregates; extremely hard, extremely firm; many very fine and few fine roots; few vertical ½ inch cracks; common pressure faces; few clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron along faces of peds; slightly acid; gradual wavy boundary.

Btss1—21 to 35 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; extremely hard, extremely firm; few very fine and fine roots; few vertical ½ inch wide cracks; common slickensides and pressure faces; few clay films on faces of peds; common medium prominent yellowish red (5YR 4/6) masses of iron in ped interiors; slightly acid; gradual wavy boundary.

Btss2—35 to 47 inches; light yellowish brown (2.5Y 6/4) clay, light olive brown (2.5Y 5/4) moist; moderate medium subangular blocky structure; extremely hard, extremely firm; few very fine roots; few slickensides and pressure faces; few clay films on faces of peds; common medium prominent yellowish red (5YR 5/6) masses of iron in ped interiors; slightly acid; gradual wavy boundary.

BCtk—47 to 59 inches; brownish yellow (10YR 6/6) clay loam, yellowish brown (10YR 5/6) moist; moderate fine subangular blocky structure; very hard, very firm; few clay films on faces of peds; few fine concretions and masses of calcium carbonate; few fine crystals of gypsums; common medium prominent yellowish brown (10YR 5/8) and common fine prominent yellowish red (5YR 5/6) masses of iron in ped interiors; few medium prominent light gray (2.5Y 7/2) masses of iron depletions along faces of peds; neutral; gradual wavy boundary.

Cky1—59 to 72 inches; pale yellow (2.5Y 7/4) interbedded shale that had clay loam texture, light yellowish brown (2.5Y 6/4) moist; common medium distinct light yellowish brown (10YR 6/4) masses of iron in ped interiors; few medium distinct light brownish gray (10YR 6/2) iron depletions; massive; very hard, very firm; few fine and medium concretions and masses of calcium carbonate; common fine crystals of gypsum; slightly acid; gradual smooth boundary.

Cky2—72 to 80 inches; light gray (2.5Y 7/2) interbedded shale that had clay texture, light brownish gray (2.5Y 6/2) moist; few medium prominent yellow (10YR 7/6) and brownish yellow (10YR 6/8) and common medium prominent yellow (2.5Y 7/6) of iron accumulation on peds faces; massive; extremely hard, extremely firm; few fine concretions and masses of calcium carbonate; common fine crystals of gypsum; slightly acid.

The solum thickness ranges from 40 to 60 inches. The content of clay in the upper 20 inches of the argillic horizon ranges from 40 to 55 percent. When dry, cracks up to 2 inches wide extend from the top of the Bt to depths of 2 to 5 feet. Pressure faces and slickensides range from few to common throughout the Bt horizons. Depth to calcium carbonate ranges from 30 to 60 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. Siliceous pebbles range from 0 to 35 percent. Reaction ranges from moderately acid to neutral.

The Bt horizon has hue of 5YR to 10YR, value 4 to 6, and chroma of 3 to 6. Texture is clay loam, sandy clay, or clay. Masses of iron in shades of red or brown range from few to common. Base saturation ranges from 76 to 100 percent. Reaction ranges from moderately acid to neutral.

The Btss horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 to 6. Texture is clay loam or clay. Masses of iron in shades of red or brown range from few to common. Reaction ranges from slightly acid to moderately alkaline.

The BCtk horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6. Texture is clay loam or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Iron depletions in shades of gray range from few to common. Calcium carbonate in the form of concretions or masses range from 1 to 30 percent.

Gypsum in the form of crystals range from 0 to 5 percent. Reaction ranges from slightly acid to moderately alkaline.

The Cky horizon has matrix colors of yellow, brown, or gray. It is clay or clay loam with interbedded shale and is mottled in shades of yellow, brown, or gray. Calcium carbonate in the form of concretions or masses range from 0 to 15 percent. Gypsum in the form of crystals range from 0 to 5 percent. Reaction ranges from slightly acid to moderately alkaline.

Some pedons have a C or Cy horizon. This horizon has matrix colors of brown or gray. It is clay loam or clay with interbedded shale. Reaction ranges from slightly acid to slightly alkaline.

Cuero Series

The Cuero series consists of very deep, very gently sloping, well drained, moderately permeable soils on uplands. These soils formed in loamy materials weathered from sandstone. Slope ranges from 1 to 3 percent. Soils of the Cuero series are fine-loamy, mixed, superactive, thermic Pachic Argiustolls.

Typical pedon of Cuero fine sandy loam, 1 to 3 percent slopes; from the intersection of Texas Highway 95 and U.S. Highway 90A in Shiner, 4.35 miles northwest on U.S. Highway 90A, and 250 feet north in pasture. USGS Shiner topographic quadrangle; lat. 29 degrees 27 minutes 12 seconds N. and long. 97 degrees 13 minutes 31 seconds W.

A—0 to 12 inches; very dark grayish brown (10YR 3/2) fine sandy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable; common very fine and fine roots; few fine pores; few wormcasts; neutral; clear smooth boundary.

Bt1—12 to 26 inches; very dark gray (10YR 3/1) sandy clay loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; hard, friable common fine roots; few fine pores; few distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt2—26 to 39 inches; brown (10YR 5/3) sandy clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, friable; common very fine roots; few distinct clay films on faces of peds; few fine threads of calcium carbonate; strongly effervescent; moderately alkaline; clear smooth boundary.

Btk—39 to 53 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; hard, friable; common very fine roots; few distinct clay films on faces of peds; 5 percent fine threads of calcium carbonate; few fine fragments of snail shells; violently effervescent; moderately alkaline; clear smooth boundary.

Bk—53 to 64 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; hard, friable; 15 percent fine and very fine concretions of calcium carbonate; violently effervescent; moderately alkaline; clear smooth boundary.

Cr—64 to 80 inches; pink (7.5YR 7/3) weakly cemented sandstone with sandy clay loam texture, light brown (7.5YR 6/3) moist; massive; sandstone interbedded with fine sandy loam; violently effervescent; moderately alkaline.

The solum ranges from 50 to more than 60 inches thick. The mollic epipedon ranges from 22 to 26 inches thick. The clay content in the control section ranges from 20 to 35 percent.

The A horizon and upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 1 or 2. Texture of the upper Bt horizon is sandy clay loam or clay loam. Reaction ranges from slightly acid to slightly alkaline.

The lower part of the Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is sandy clay loam or loam. Concretions of calcium carbonate range from none to few. Some pedons are slightly effervescent or strongly effervescent. Reaction ranges from slightly acid to moderately alkaline.

The Btk horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 2 to 4. Concretions of calcium carbonate range from few to common. Effervescence ranges from slightly effervescent to violently effervescent. Reaction is slightly alkaline or moderately alkaline.

The Bk horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 4 to 6. Masses and concretions of calcium carbonate range from 15 to 30 percent. The calcium carbonate equivalent ranges from 15 to 35 percent. It is strongly effervescent to violently effervescent.

The Cr or C horizons have colors in shades of pink and yellow. It ranges from weakly cemented calcareous sandstone to massive calcareous loamy or sandy material.

Degola Series

The Degola series consists of very deep, nearly level, well drained, moderately permeable soils on flood plains. These soils formed in recent alluvium. Slope are 0 to 1 percent. Soils of the Degola series are fine-loamy, mixed, superactive, hyperthermic Cumulic Haplustolls.

Typical pedon of Degola clay loam, frequently flooded; from the intersection of U.S. Highway 87 and Farm Road 1116, 0.7 mile southeast on U.S. Highway 87 to entrance of ranch road, 2 miles south on ranch road, and 150 feet west in rangeland. USGS Sample topographic quadrangle; lat. 29 degrees 14 minutes 35 seconds N. and long. 97 degrees 33 minutes 43 seconds W.

A1—0 to 11 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; very hard, very firm; common fine, medium, and coarse roots; few thin layers of brown (10YR 5/3) loamy material; few small pressure faces; few insects channels; slightly alkaline; gradual smooth boundary.

A2—11 to 25 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; hard, firm; few fine, medium, and coarse roots; few insects channels; slightly alkaline; gradual smooth boundary.

Bw1—25 to 51 inches; grayish brown (10YR 5/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, firm; few 2-inch seam of light brownish gray (10YR 6/2) fine sandy loam; few fine threads of salt; neutral; gradual smooth boundary.

Bw2—51 to 70 inches; very pale brown (10YR 7/3) sandy clay loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; hard, firm; few thin seams of light brownish gray (10YR 6/2) fine sandy loam; few fine threads of salt; neutral; gradual smooth boundary.

Bw3—70 to 80 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard; friable; few fine faint brown (10YR 4/3) iron masses in interiors of peds; few fine salt threads; neutral.

The solum thickness is more than 80 inches. The weighted average clay content of the 10- to 40-inch control section ranges from 18 to 35 percent. Thickness of the mollic epipedon ranges from 20 to 50 inches.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. Texture is loam or clay loam. There are few thin strata of fine sandy loam or loam. Reaction ranges from slightly acid to slightly alkaline.

The Bw horizon has hue of 10YR, value of 4 to 7, and chroma of 1 to 3. Texture is fine sandy loam or sandy clay loam. There are few thin strata of loam, fine sandy loam, or sandy clay loam. Masses of iron in shades of yellow or brown range from none to few. Salt threads range from 0 to 2 percent in the lower part of layer. Electrical conductivity in the lower part ranges from 0 to 8 dS/m.

Denhawken Series

The Denhawken series (fig. 22) consists of very deep, very gently sloping and gently sloping, well drained, very slowly permeable soils on upland plains. These soils formed in calcareous clayey marine shale. Slope ranges from 1 to 5 percent. Soils of the Denhawken series are fine, smectitic, hyperthermic Vertic Haplustepts.

Typical pedon of Denhawken sandy clay loam, in an area of Elmendorf-Denhawken complex, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 1.0 mile south on Farm Road 108, 4 miles southwest on county road, 1.0 mile northwest, 0.4 mile southwest, 0.2 mile north, and 75 feet east in rangeland. USGS Bald Mound topographic quadrangle; lat. 29 degrees 12 minutes 33 seconds N. and long. 97 degrees 41 minutes 04 seconds W.

A—0 to 6 inches; grayish brown (10YR 5/2) sandy clay loam, dark grayish brown (10YR 4/2) moist; moderate very fine and fine subangular blocky structure; hard, firm; many very fine and fine roots; many very fine and fine pores; few wormcasts; few fine and medium masses of calcium carbonate; few fine crystals and threads of gypsum; few siliceous pebbles; strongly effervescent; slightly alkaline; clear smooth boundary.

BA—6 to 11 inches; light yellowish brown (2.5Y 6/3) clay, light olive brown (2.5Y 5/3) moist; moderate fine and medium subangular blocky structure; extremely hard, extremely firm; many very fine and fine roots; common very fine and fine pores; few ¼ to ½ inch wide cracks; few wormcasts; few pressure faces; few fine and medium concretions of calcium carbonate; few siliceous pebbles; 25 percent calcium carbonate equivalent; strongly effervescent; moderately alkaline; gradual smooth boundary.

Bk—11 to 18 inches; light yellowish brown (2.5Y 6/3) clay, light olive brown (2.5Y 5/3) moist; moderate medium angular blocky structure that forms wedge-shape aggregates; extremely hard, extremely firm; common very fine and fine roots; common fine pores; few vertical cracks filled with dark grayish brown (10YR 4/2) materials; few pressure faces; few brown (10YR 4/3) iron-manganese stains on faces of peds; 2 percent fine and medium concretions of calcium carbonate; few siliceous pebbles; 30 percent calcium carbonate equivalent; strongly effervescent; slightly alkaline; gradual smooth boundary.

Bkss1—18 to 33 inches; pale yellow (2.5Y 7/3) clay, light yellowish brown (2.5Y 6/3) moist; moderate medium angular blocky structure; extremely hard, extremely firm; common very fine and fine roots; common fine pores; few vertical cracks ⅛ to ¼ inch wide filled with dark grayish brown (10YR 4/2) materials; few slickensides; few very dark gray (10YR 3/1) iron-manganese stains; few fine prominent strong brown (7.5YR 5/8) masses of iron on faces of peds; 2 percent fine and medium concretions of calcium carbonate; 28 percent calcium carbonate equivalent; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss2—33 to 45 inches; pale yellow (2.5Y 7/3) clay, light yellowish brown (2.5Y 6/3) moist; weak medium and coarse subangular blocky structure; extremely hard, extremely firm; common very fine roots; common fine pores; few vertical cracks ⅛ to ¼ inch wide filled with dark grayish brown (10YR 4/2) materials; few slickensides; few very dark gray (10YR 3/1) iron-manganese stains; few fine prominent strong brown (7.5YR 5/8) masses of iron on faces of peds; 10 percent masses of calcium carbonate; 3 percent fine concretions of calcium carbonate; 23 percent calcium carbonate equivalent; strongly effervescent; slightly alkaline; gradual wavy boundary.

Figure 22.—A profile of Denhawken sandy clay loam in an area of Elmendorf-Denhawken complex, 1 to 3 percent slopes. The clayey texture features include pressure faces and slickensides. Organic matter has stained the surface a dark color.

BCky1—45 to 55 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; weak very coarse prismatic structure parting to weak coarse subangular blocky; extremely hard, extremely firm; common very fine roots; common fine pores; few pressure faces; few very dark gray (10YR 3/1) iron-manganese stains; common medium distinct light olive brown (2.5Y 5/6) and few fine prominent yellowish red (5YR 5/8) masses of iron on faces of peds; 8 percent masses of calcium carbonate; 5 percent masses of gypsum; 10 percent calcium carbonate equivalent; strongly effervescent; slightly alkaline; gradual smooth boundary.

BCky2—55 to 70 inches; pale yellow (2.5Y 7/3) clay, light yellowish brown (2.5Y 6/3) moist; weak coarse subangular blocky structure; extremely hard, extremely firm; common very fine roots; few pressure faces; common medium prominent strong brown (7.5YR 5/8) and common fine and medium distinct light olive brown (2.5Y 5/4) masses of iron in ped interiors; 7 percent masses of calcium carbonate; 5 percent crystals and threads of gypsum; 10 percent calcium carbonate equivalent; strongly effervescent; slightly alkaline; clear smooth boundary.

Cky—70 to 80 inches; pale yellow (5Y 8/3) shale that has clay texture, pale yellow (5Y 7/3) moist; common fine prominent yellowish brown (10YR 5/8) and few fine prominent yellowish red (5YR 5/8) mottles; massive; extremely hard, extremely firm; few black (10YR 2/1) iron-manganese stains; 8 percent masses of calcium carbonate; 5 percent crystals of gypsum; strongly effervescent; slightly alkaline.

The solum thickness ranges from 60 to 80 inches. The clay content in the control section ranges from 30 to 55 percent. When dry, cracks up to 1½ inches wide extend from the surface to more than 20 inches. Slickensides or pressure faces range from none to few. Reaction is slightly alkaline or moderately alkaline.

The A and BA horizons have hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 3.

The Bk or Bkss horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or 3. Texture is clay loam or clay. Masses of iron in shades of yellow or brown range from none to few. Calcium carbonate masses and concretions range from 2 to 10 percent. Calcium carbonate equivalent ranges from 2 to 25 percent.

The BCky horizon has hue of 2.5Y, value of 4 to 7, and chroma of 2 to 7. Texture is clay loam or clay. Masses of iron in shades of yellow or brown range from none to common. Masses and concretions of calcium carbonate range from 5 to 15 percent. Calcium carbonate equivalent ranges from 10 to 35 percent. Crystals, masses, and threads of gypsum range from 2 to 15 percent.

The Ck or Cy horizon has hue of 2.5Y or 5Y, value of 6 to 8, and chroma of 2 to 8. It is shale of clay texture. Mottles in shades of yellow or brown range from none to common. Masses and concretions of calcium carbonate range from 0 to 15 percent. Crystals of gypsum range from 0 to 15 percent. Electrical conductivity ranges from 2 to 16 dS/m.

Dimebox Series

The Dimebox series consists of very deep, very gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in clayey marine sediments. Slope ranges from 1 to 3 percent. Soils of the Dimebox series are fine, smectitic, thermic Udic Haplusterts.

Typical pedon of the Dimebox series; from the intersection of Farm Road 1296 and Farm Road 1115 in Waelder, 1.2 miles northwest of Farm Road 1296, and 300 feet west in cropland; USGS Waelder topographic quadrangle; lat. 29 degrees 42 minutes 51 seconds N. and long. 97 degrees 18 minutes 20 seconds W.

Ap—0 to 6 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate fine angular blocky structure; extremely hard, very firm; common fine and medium roots; many fine pores; few ironstone pebbles; neutral; clear wavy boundary.

A—6 to 17 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; strong fine angular blocky structure that forms wedge-shaped aggregates; extremely hard, very firm; common fine and few medium roots; common fine pores; few vertical cracks; few ironstone pebbles; neutral; gradual wavy boundary.

Bss1—17 to 34 inches; very dark gray (10YR 3/1) clay, very dark gray (10YR 3/1) moist; strong medium angular blocky structure; extremely hard, very firm; few fine and medium roots; few ½ to 1 inch wide vertical cracks; common grooved slickensides; few fine and medium ironstone pebbles; neutral; gradual wavy boundary.

Bss2—34 to 55 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; extremely hard, very firm; few fine roots; few streaks of very dark gray (10YR 3/1) material in vertical cracks; common grooved slickensides; few fine concretions of calcium carbonate; common medium distinct yellowish brown (10YR 5/8) masses of iron on faces of peds; few fine and medium ironstone pebbles; slightly alkaline; gradual wavy boundary.

Bkssy—55 to 64 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; extremely hard, very firm; few fine roots; few very dark gray (10YR 3/1) streaks; common slickensides; 5 percent fine and medium concretions of calcium carbonate; 3 percent crystals of gypsum; common medium distinct yellowish brown (10YR 5/8) masses of iron in ped interiors; few fine ironstone pebbles; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cy—64 to 80 inches; light gray (2.5Y 7/2) clay interbedded with shale fragments, light brownish gray (2.5Y 6/2) moist; common medium distinct yellowish brown (10YR 5/8) masses of iron in ped interiors; massive; very hard, very firm; 3 percent gypsum crystals; slightly acid.

The A and B horizons are cyclic, ranging from 60 to more than 80 inches thick. When dry, cracks 1 to 3 inches wide extend from the surface to depths of more than 60 inches. Depth to slickensides ranges from 15 to 22 inches. The clay content is 40 to 60 percent in the control section. Ironstone pebbles range from none to few.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Reaction ranges from moderately acid to neutral.

The upper part of the Bss horizon has hue of 10YR to 2.5Y, value of 2 to 5, and chroma of 1. Slickensides range from few to common. Reaction is slightly acid or neutral.

The lower part of the Bss horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 6. Redoximorphic masses of iron in shades of yellow or brown range from none to common. Slickensides range from common to many. Concretions of calcium carbonate range from none to few. Crystals of gypsum range from none to few. Reaction ranges from slightly acid to slightly alkaline.

The Bkyss or BC horizon where present, has hue of 10YR or 2.5Y, value of 4 to 7 and chroma of 2 to 6. Redoximorphic masses of iron in shades of yellow, brown, or gray range from none to common. Concretions and masses of calcium carbonate range from 0 to 5 percent. Crystals of gypsum range from 0 to 5 percent. Slickensides range from common to many. Reaction ranges from slightly acid to moderately alkaline. In some pedons this horizon is slightly or strongly calcareous.

The 2Cy horizon is horizontally bedded clay and shale. The color is in shades of yellow, brown, olive, or gray. Crystals of gypsum range from 0 to 5 percent. Concretions of calcium carbonate range from 0 to 15 percent. Reaction is slightly acid to moderately alkaline.

Dreyer Series

The Dreyer series consists of very deep, gently sloping to strongly sloping, well drained, very slowly permeable soils on uplands. These soils formed in calcareous clays and marls sediments. Slope ranges from 3 to 12 percent. Soils of the Dreyer series are fine, smectitic, thermic Udic Calciusterts.

Typical location of Dreyer clay, 5 to 12 percent slopes; from the intersection of Farm Road 1296 and Farm Road 1115 in Waelder, 1.4 miles northwest on Farm Road 1296, 1.0 mile north on county road, and 120 feet west in rangeland. USGS

Waelder topographic quadrangle; lat. 29 degrees 43 minutes 58 seconds N. and long. 97 degrees 18 minutes 14 seconds W.

A—0 to 7 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium angular blocky structure; extremely hard, very firm; many fine and medium roots; few coarse roots; common fine and medium ironstone pebbles; strongly effervescent; moderately alkaline; clear smooth boundary.

Bw—7 to 18 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; moderate fine and medium angular blocky structure that form wedge-shaped aggregates; extremely hard, very firm; many fine and medium roots; few pressure faces; few very dark grayish brown streaks in cracks; few fine and medium concretions of calcium carbonate; common fine and medium ironstone pebbles; few coarse ironstone pebbles; strongly effervescent; moderately alkaline; clear wavy boundary.

Bkss1—18 to 38 inches; light yellowish brown (2.5Y 6/4) clay, light olive brown (2.5Y 5/4) moist; moderate medium angular blocky structure; extremely hard, very firm; common fine and medium roots; few vertical cracks ½ inch wide with yellow brown material; common grooved slickensides; 5 percent fine and medium concretions of calcium carbonate; few masses of calcium carbonate; few fine and coarse ironstone pebbles; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss2—38 to 42 inches; pale yellow (2.5Y 7/4) clay, light yellowish brown (2.5Y 6/4) moist; moderate medium angular blocky structure; extremely hard, very firm; few fine roots; common grooved slickensides; 6 percent fine concretions of calcium carbonate; few fine ironstone pebbles; strongly effervescent; moderately alkaline; gradual wavy boundary.

C—42 to 80 inches; light gray (2.5Y 7/2) interbedded shale that has clay texture, light gray (2.5Y 7/2) moist; few coarse distinct brownish yellow (10YR 6/8) mottles; massive; very hard, very firm; few fine concretions and stains of iron-manganese; strongly effervescent; moderately alkaline.

The thickness of the solum ranges from 40 to more than 60 inches. Texture is clay and the content of clay ranges from 40 to 60 percent. Unless cultivated, gilgai microrelief commonly develops. When dry, surface cracks extend to more than 20 inches into the subsoil. Depth to slickensides ranges from 8 to 18 inches and they extend throughout the solum. Concretions and masses of calcium carbonate range from 0 to 35 percent throughout. Ironstone pebbles range from 2 to 6 percent throughout. Reaction is slightly alkaline or moderately alkaline and is calcareous throughout.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from none to few. Iron depletions in shades of gray range from none to few.

The Bw horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4.

The Bkss horizons have hue of 10YR or 2.5Y, value of 5 to 7, and chroma 2 to 4. Masses of iron in shades of yellow or brown range from none to few. Iron depletions in shades of gray range from none to few.

The BCk or BCkss horizon, where present, has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 2 to 4. The clay texture is interbedded with gray fragments of shale. Masses of iron in shades of yellow or brown range from none to few.

The C horizon has colors similar to the BCk horizon in both its matrix and mottles. It has shale which is interbedded with clay. Crystals of gypsum range from 0 to 2 percent.

Ecleto Series

The Ecleto series consists of soils that are shallow to weakly cemented sandstone. They are very gently sloping to gently sloping, well drained, slowly permeable soils on uplands. These soils formed in clayey materials over thick beds of sandstone or sandstone interbedded with siltstone. Slope ranges from 1 to 5 percent. Soils of the Ecleto series are clayey, smectitic, hyperthermic shallow Typic Argiustolls.

Typical pedon of Ecleto sandy clay loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.8 miles south on Farm Road 108, and 250 feet east in rangeland. USGS Sample topographic quadrangle; lat. 29 degrees 09 minutes 35 seconds N. and long. 97 degrees 36 minutes 15 seconds W.

A—0 to 4 inches; dark gray (10YR 4/1) sandy clay loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure; slightly hard, friable; many fine and few medium roots; few insect tunnels; neutral; clear smooth boundary.

Bt—4 to 12 inches; dark gray (10YR 4/1) sandy clay loam, very dark gray (10YR 3/1) moist; moderate fine and medium angular blocky structure; very hard, very firm; common fine and few medium roots; common thin clay films on faces of peds; few insect tunnels; slightly alkaline; clear smooth boundary.

BC—12 to 18 inches; grayish brown (10YR 5/2) gravelly clay loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure; hard, firm; few fine and medium roots; 2 percent fine masses and films of calcium carbonate; 16 percent weakly cemented sandstone fragments; moderately alkaline; gradual smooth boundary.

Cr—18 to 80 inches; light gray (5Y 7/2) weakly cemented sandstone interbedded with siltstone of loam texture, light olive gray (5Y 6/2) moist; massive; hard, firm; few thin masses of calcium carbonate in the upper part, siltstone fragments do not slake in water; moderately alkaline.

The solum thickness ranges from 10 to 20 inches. The clay content of the control section ranges from 35 to 45 percent.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. Reaction is neutral or slightly alkaline.

The Bt horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. Texture is sandy clay or clay. Reaction ranges from slightly acid to slightly alkaline in the upper part of the Bt horizon and is slightly alkaline or moderate alkaline in the lower part.

The BC horizon has hue of 10YR, value of 4 to 5, and chroma of 1 or 2. Texture is clay loam or clay. Masses and films of calcium carbonate range from 0 to 5 percent. Weakly cemented sandstone fragments range from 15 to 25 percent. Reaction is slightly alkaline or moderately alkaline.

The Cr horizon has hue of 2.5Y or 5Y, value of 6 to 8, and chroma of 1 or 2. It is weakly cemented sandstone or siltstone of fine sandy loam, loam, or sandy clay loam texture. Masses and films of calcium carbonate range from 0 to 2 percent by volume. Some pedons have few fine brown (10YR 4/3) or yellow (10YR 7/6) masses of iron-manganese.

Edge Series

The Edge series consists of soils that are deep to weathered siltstone. They are very gently sloping to strongly sloping, well drained, very slowly permeable soils on uplands. These soils formed in stratified loamy materials. Slope ranges from 1 to 12 percent. Soils of the Edge series are fine, mixed, active, thermic Udic Paleustalfs.

Typical pedon of Edge fine sandy loam, 1 to 3 percent slopes; 4.0 miles northwest of Nixon, from the intersection of Texas Highway 80 and 97, 5.4 miles northeast on Texas Highway 97, 0.7 miles northwest, 0.1 mile west, 1.0 mile northwest and 50 feet east in rangeland. USGS Leesville topographic quadrangle; lat. 29 degrees 23 minutes 44 seconds N. and long. 97 degrees 42 minutes 10 seconds W.

A—0 to 11 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable; common fine and medium roots; few ironstone pebbles; slightly acid; abrupt smooth boundary.

Bt1—11 to 31 inches; red (2.5YR 4/6) clay, dark red (2.5YR 3/6) moist; weak fine prismatic structure parting to moderate fine and medium angular blocky structure; very hard, very firm; common fine and few medium roots; common clay films on faces of peds and along root channels; few vertical root channels filled with fine sandy loam; few ironstone pebbles; moderately acid; gradual wavy boundary.

Bt2—31 to 43 inches; yellowish red (5YR 5/6) clay, yellowish red (5YR 4/6) moist; moderate fine and medium prismatic structure parting to moderate medium angular blocky structure; very hard, very firm; few fine roots; few fine and medium root channels; common clay films on faces of peds; few masses of yellow fine sandy loam; neutral; gradual wavy boundary.

Bt3—43 to 52 inches; reddish yellow (5YR 6/6) sandy clay, yellowish red (5YR 5/6) moist; moderate, medium prismatic structure parting to moderate medium angular blocky structure; hard, firm; common clay films on faces of peds; few fine masses of calcium carbonate; few masses of yellow fine sandy loam; neutral; gradual wavy boundary.

BCt—52 to 59 inches; brownish yellow (10YR 6/8) sandy clay loam, yellowish brown (10YR 5/8) moist; few fine prominent red (2.5YR 4/8) masses of iron; weak fine subangular blocky structure; hard, firm; few clay films on faces of peds; few fine masses of calcium carbonate; common yellow fine sandy loam seams; slightly alkaline; gradual wavy boundary.

C—59 to 80 inches; yellow (10YR 7/8) weathered siltstone that has a sandy clay loam texture, brownish yellow (10YR 6/8) moist; massive; hard, firm; few fine masses of calcium carbonate; moderately alkaline.

The solum thickness ranges from 40 to 60 inches. The clay content in the control section ranges from 35 to 50 percent. The base saturation of the argillic horizon is 75 percent or more in one or more of the Bt horizons. Some pedons have few concretions of calcium carbonate below a depth of 30 inches. Ironstone gravel ranges from 0 to 25 percent in the surface layer.

The A horizon has a hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 4. The E horizon, where present, is 1 or 2 units of value lighter than the A horizon. Texture is fine sandy loam or gravelly fine sandy loam. Reaction ranges from moderately acid to neutral.

The Bt horizon has a hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 4 to 8. The texture of the upper part of the Bt horizon is sandy clay or clay. Reaction is very strongly acid to moderately acid. The texture in the lower part of the Bt horizon is clay loam or sandy clay. Masses of iron in shades of red, yellow, or brown range from none to common. Some horizons have a mottled matrix in these colors. Reaction is very strongly acid to neutral.

The BCt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. Texture is fine sandy loam, sandy clay loam, or clay loam. Masses of iron in shades of red, yellow, or brown range from none to common. Some horizons have a mottled matrix in these colors. Reaction ranges from very strongly acid to neutral.

The C horizon is siltstone and has colors in shades of red, yellow, brown, or gray. Mottles of these colors range from none to common. The texture is fine sandy loam or sandy clay loam and in some pedons these textures are interbedded with thin strata of sandy material. Reaction is slightly acid to moderately alkaline.

Elmendorf Series

The Elmendorf series (fig. 23) consists of very deep, very gently sloping to gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in calcareous clayey marine shales. Slope ranges from 1 to 5 percent. Soils of the Elmendorf series are fine, smectitic, hyperthermic Vertic Argiustolls.

Typical pedon of Elmendorf sandy clay loam, in an area of Elmendorf-Denhawken complex, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 1.0 mile south on Farm Road 108, 4.0 miles southwest on county road, 1.0 mile northwest, 0.4 mile southwest, 0.2 mile north, and 50 feet east in rangeland. USGS Bald Mound topographic quadrangle; lat. 29 degrees 12 minutes 33 seconds N. and long. 97 degrees 41 minutes 04 seconds W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; hard, firm; many very fine, fine, and common medium roots; many very fine and medium pores; few wormcasts; few siliceous pebbles; neutral; abrupt smooth boundary.

A2—4 to 15 inches; very dark gray (10YR 3/1) sandy clay loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure; hard, firm; many very fine, fine and common medium root; many very fine and medium pores; few wormcasts; few pressure faces; few siliceous pebbles; slightly alkaline; clear smooth boundary.

BA—15 to 27 inches; black (10YR 2/1) sandy clay loam, black (10YR 2/1) moist; moderate fine and medium angular blocky structure; extremely hard, extremely firm; many very fine and fine roots; many very fine and medium pores; few pressure faces; few clay films on faces of peds and in pores; few fine concretions of calcium carbonate; slightly alkaline; clear smooth boundary.

Btss1—27 to 39 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium and coarse angular blocky structure; extremely hard, extremely firm; common fine roots; common fine pores; few vertical cracks 1/8 to ¼ inch wide filled with black materials; few slickensides on horizontal faces of peds; few pressure faces; few clay films on faces of peds and in pores; few fine and medium irregular masses of calcium carbonate; few fine concretions of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

Btss2—39 to 46 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate medium angular blocky structure; extremely hard, extremely firm; common fine roots; common fine pores; few vertical cracks 1/8 to ¼ inch wide filled with dark gray materials; few slickensides on horizontal peds faces; few pressure faces; few clay films on faces of peds and in pores; common fine distinct olive brown (2.5Y 4/4) masses of iron in ped interiors; few fine and medium irregular masses of calcium carbonate between peds; strongly effervescent; slightly alkaline; clear wavy boundary.

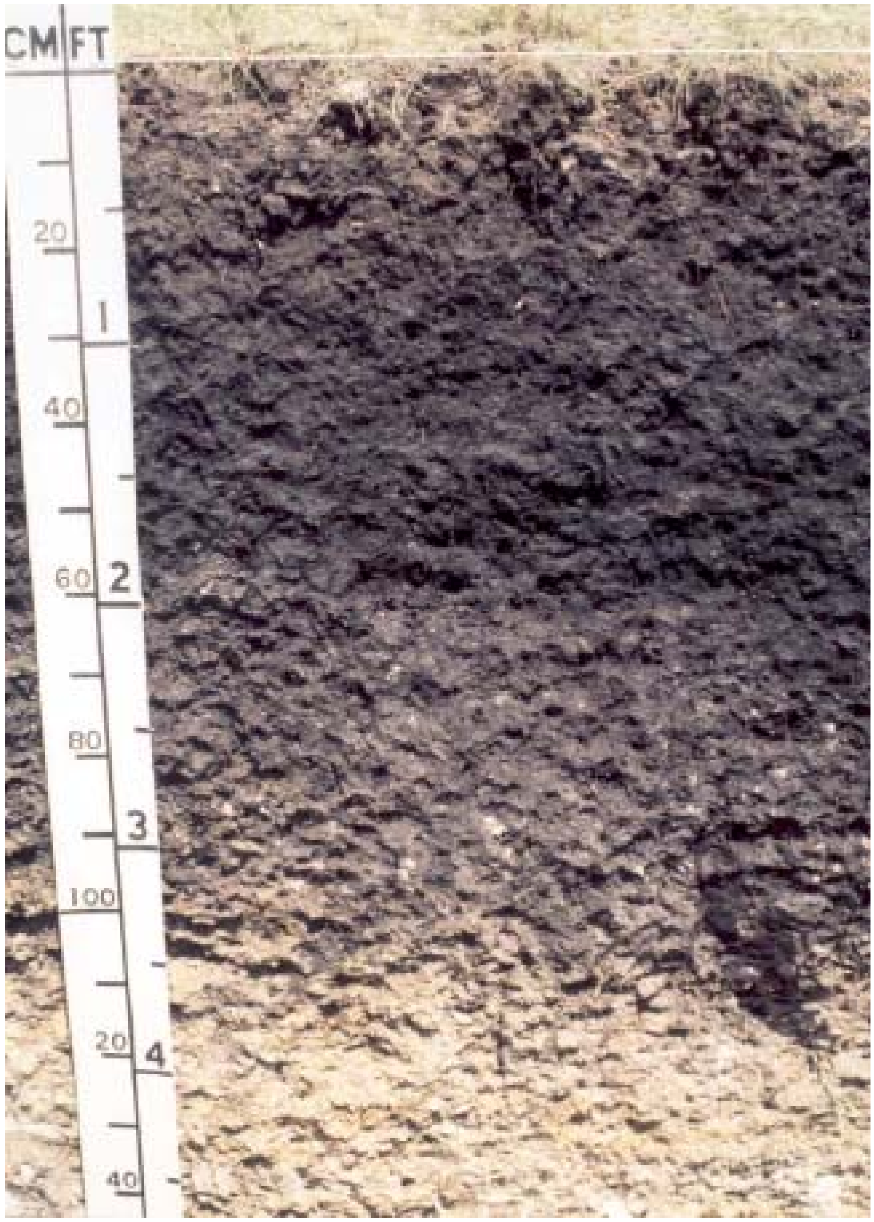

Figure 23.—A profile of Elmendorf sandy clay loam, in an area of Elmendorf-Denhawken complex, 1 to 3 percent slopes. Organic matter has stained the surface a dark color.

Btss3—46 to 54 inches; light brownish gray (2.5Y 6/2) clay, grayish brown (2.5Y 5/2) moist; moderate medium angular blocky structure; extremely hard, extremely firm; common fine roots; common fine pores; few slickensides on horizontal peds faces; few pressure faces; few clay films on faces of peds and in pores; common fine distinct olive yellow (2.5Y 6/6) masses of iron in ped interiors; few fine and medium irregular masses of calcium carbonates between peds; few fine platelike crystals of gypsum; strongly effervescent; slightly alkaline; clear wavy boundary.

Bky—54 to 63 inches; pale yellow (5Y 7/3) clay, pale olive (5Y 6/3) moist; weak medium and coarse angular blocky structure; very hard, very firm; common fine roots; common fine pores; common medium distinct olive yellow (2.5Y 6/8) masses of iron in ped interiors; 6 percent medium masses of calcium carbonate between peds; common fine platelike crystals of gypsum; strongly effervescent; slightly alkaline; clear smooth boundary.

BCk—63 to 67 inches; pale yellow (2.5Y 7/4) clay loam, light yellowish brown (2.5Y 6/3) moist; weak fine and medium platy structure; very hard, firm; common fine roots; few black (10YR 2/1) iron-manganese stains on faces of peds and in pores; few medium distinct light olive brown (2.5Y 5/4) masses of iron in ped interiors; 5 percent medium irregular masses of calcium carbonate between peds; common fine platelike crystals of gypsum; very slightly effervescent; slightly alkaline; abrupt smooth boundary.

2C—67 to 80 inches; pale yellow (2.5Y 8/2) sandy clay loam, light gray (2.5Y 7/2) moist; common coarse prominent yellowish brown (10YR 5/8) mottles; massive; hard, firm; common fine root; few iron-manganese stains on faces of peds and in pores; few coats of calcium carbonate on faces of peds and in pores; slightly alkaline.

The thickness of the solum is 60 to more than 80 inches. When dry, the soil has cracks up to 2 inches wide at the surface and extends to depths greater than 20 inches. The clay content of the control section ranges from 35 to 55 percent. Depth to secondary carbonates ranges from 16 to 54 inches. Slickensides range from none to few at depths of 20 to 50 inches.

The A and BA horizons have hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Reaction is neutral or slightly alkaline.

The Btss or Bt horizon has hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 1 or 2. Texture is clay loam or clay. Masses of iron in the shades of yellow or brown range from none to few. Masses and concretions of calcium carbonate range from 0 to 25 percent. Crystals of gypsum range from 0 to 10 percent. Reaction is slightly alkaline or moderately alkaline.

The Bky or BCk horizon, where present, has hue of 10YR to 5Y, value of 5 to 7, and chroma of 2 to 8. Texture is clay loam or clay. Masses of iron in shades of yellow or brown range from none to few. Crystals of gypsum range from 0 to 10 percent. Masses, films, and concretions of calcium carbonate range from 5 to 25 percent. Reaction is slightly alkaline or moderately alkaline.

The BCk horizon, where present, has colors and textures similar to the Bky horizon.

The 2C or C horizon, where present, has hue of 10YR to 5Y, value of 5 to 8, and chroma of 2 to 8. It is interbedded shale with sandy clay loam or clay loam texture. Masses of iron in shades of yellow or brown range from none to few. Coats and masses of calcium carbonate range from 2 to 35 percent. Crystals of gypsum range from 0 to 25 percent. Reaction is slightly alkaline or moderately alkaline.

Eloso Series

The Eloso series (fig. 24) consists of soils that are moderately deep to siltstone. They are very gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in clayey materials over thick beds of weakly cemented siltstone. Slope ranges from 1 to 3 percent. Soils of the Eloso series are fine, smectitic, hyperthermic Vertic Haplustolls.

Typical pedon of Eloso clay, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.1 miles south on Farm Road 108, 1.2 miles southwest on county road, and 2,000 feet west in pastureland. USGS Sample topographic quadrangle; lat. 29 degrees 09 minutes 12 seconds N. and long. 97 degrees 37 minutes 28 seconds W.

Figure 24.—A profile of Eloso clay, 1 to 3 percent slopes. The lighter colored area indicates presence of carbonates, and begins at a depth of 24 inches.

A—0 to 9 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak fine and medium subangular blocky structure; extremely hard, extremely firm; many fine and few medium roots; common cracks ½ to ¾ inch wide; few pressure faces; few siliceous pebbles; neutral; clear smooth boundary.

Bw—9 to 24 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure that forms wedge-shaped aggregates; extremely hard, extremely firm; common fine roots; few cracks ¼ to ½ inch wide; common pressure faces; slightly alkaline; gradual wavy boundary.

Bk—24 to 37 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; extremely hard, extremely firm; few fine roots; few pressure faces; 5 percent masses of calcium carbonate; strongly effervescent; slightly alkaline; gradual smooth boundary.

2Cr—37 to 80 inches; pale yellow (2.5Y 8/2) weakly cemented siltstone with texture of loam, light gray (2.5Y 7/2) moist; massive; slightly hard, firm, common thin layers of calcium carbonate in upper part; few siltstone fragments do not slake in water after 24 hours; slightly alkaline.

The solum thickness ranges from 30 to 40 inches. The clay content of the control section ranges from 40 to 55 percent. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Reaction is neutral or slightly alkaline. Some pedons are calcareous.

The Bw horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. Reaction is slightly alkaline or moderately alkaline. Some pedons are calcareous.

The Bk horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2. Masses or concretions of calcium carbonate range from 2 to 10 percent. Reaction is slightly alkaline or moderately alkaline.

Some pedons have a BCk horizon with hue of 10YR, value of 4 to 6, and chroma of 1 to 4. Texture is clay loam, silty clay, or clay. Masses and concretions of calcium carbonate range from 2 to 5 percent. Reaction is slightly alkaline or moderately alkaline.

The 2Cr horizon is noncalcareous weakly cemented siltstone of loam or silt loam texture. It has hue of 10YR to 5Y, value of 7 or 8, and chroma of 1 to 3. Thin layers of calcium carbonate are interbedded in the upper part. Reaction is slightly alkaline or moderately alkaline.

Flatonia Series

The Flatonia series consists of soils that are deep to siltstone. They are very gently sloping, moderately well drained, slowly permeable soils on uplands. These soils formed in alkaline clayey and loamy weakly cemented siltstones that contain tuffaceous materials. Slope ranges from 1 to 3 percent. Soils of the Flatonia series are fine, smectitic, thermic Udertic Argiustolls.

Typical pedon of Flatonia sandy clay loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 90A and Farm Road 443, 1.2 miles west on U.S. Highway 90A, 3.5 miles north on county road, 2.0 miles east, and 150 feet west in rangeland; USGS Hamon topographic quadrangle; lat. 29 degrees 29 minutes 56 seconds N. and long. 97 degrees 15 minutes 30 seconds W.

A—0 to 12 inches; very dark gray (10YR 3/1) sandy clay loam, black (10YR 2/1) moist; weak fine subangular blocky structure; very hard, very firm; many very fine, fine and few medium roots; common fine pores; few krotovinas; few cracks up to ½ inch wide; slightly alkaline; clear smooth boundary.

Bt—12 to 33 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure that forms wedge-shape aggregates; extremely hard, extremely firm; few very fine roots; few vertical cracks up to ¼ inch wide; common pressure faces; few clay films on faces of peds; moderately alkaline; gradual wavy boundary.

Btss1—33 to 42 inches; grayish brown (10YR 5/2) clay, dark gray (10YR 4/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few very fine roots; few vertical cracks ½ inch wide; few slickensides and pressure faces; few clay films on faces of peds; few fine masses and concretions of calcium carbonate; moderately alkaline; gradual wavy boundary.

Btss2—42 to 49 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; weak medium and coarse angular blocky structure; extremely hard, extremely firm; few very fine roots; few slickensides and pressure faces; few clay films along faces of peds; few fine masses and concretions of calcium carbonate; few fine distinct dark yellowish brown (10YR 4/4) masses of iron in ped interiors; moderately alkaline; gradual wavy boundary.

BCk—49 to 54 inches; light gray (2.5Y 7/2) clay loam, light brownish gray (2.5Y 6/2) moist; weak coarse subangular blocky structure; very hard, very firm; few very fine roots; common fine and medium masses and concretions of calcium carbonate; few weakly cemented masses of pale yellow (2.5Y 8/3) siltstone; strongly effervescent; moderately alkaline; clear smooth boundary.

Cr—54 to 80 inches; pale yellow (5Y 8/3) weakly cemented siltstone that crushes to silty clay loam; pale yellow (5Y 7/3) moist; massive; hard, firm; strongly effervescent; moderately alkaline.

The solum thickness ranges from 40 to 60 inches. When dry, cracks up to 2 inches wide at the surface extend to a depth of 20 to 30 inches. Slickensides and pressure faces range from few to common below a depth of 14 inches.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Reaction ranges from slightly acid to slightly alkaline.

The Bt horizon has hue of 10YR, value of 2 to 6, and chroma of 1 or 2. Texture is sandy clay loam, silty clay, or clay. Masses of iron in shades of yellow or brown range from none to few. Reaction ranges from neutral to moderately alkaline.

The Btss horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2. Texture is sandy clay loam, silty clay, or clay. Masses of iron in shades of yellow or brown range from none to few. Weakly cemented masses and concretions of calcium carbonate range from none to few. Reaction ranges from neutral to moderately alkaline.

The BCk horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 1 or 2. Texture is loam, clay loam, or clay. Masses of iron in shades of yellow or brown range from none to few. Weakly cemented masses and concretions of calcium carbonate range from few to common. Reaction is slightly alkaline or moderately alkaline. Some pedons have a BC horizon with similar colors and textures at the BCk horizon.

The Cr horizon has hue of 10YR to 5Y, value of 7 or 8, and chroma of 2 or 3. It is weakly cemented siltstone which crushes to a texture of silty clay loam or silt loam and has thin seams and strata of fine sand. It has few or common concretions, threads, and masses of calcium carbonate.

Frelsburg Series

The Frelsburg series consists of very deep, very gently sloping and gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in calcareous clays and marls sediment. Slope ranges from 1 to 5 percent. Soils of the Frelsburg series are fine, smectitic, thermic Udic Calciusterts.

Typical pedon of Frelsburg clay, 3 to 5 percent slopes; from the intersection of U.S. Highway 183 and Farm Road 2067, near Cheapside, 7.0 miles southwest on Farm Road 2067, 0.7 mile west on county road, and 150 feet northwest in pastureland. USGS Cheapside topographic quadrangle; lat. 29 degrees 16 minutes 32.0 seconds N. and long. 97 degrees 24 minutes 49.0 seconds W.

A—0 to 10 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak fine subangular blocky structure; extremely hard, extremely firm; many very fine, fine and common medium roots; common fine pores; few pressure faces; few rounded pebbles; slightly effervescent; moderately alkaline; clear wavy boundary.

Bss—10 to 18 inches; gray (10YR 5/1) clay, dark gray (10YR 4/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; many fine and medium roots; few cracks filled with very dark gray (10YR 3/1) clay; few slickensides and common pressure faces; few fine concretions of calcium carbonate; few rounded pebbles; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss1—18 to 43 inches; gray (10YR 5/1) clay, dark gray (10YR 4/1) moist; moderate coarse prismatic structure parting to moderate medium angular blocky; extremely hard, extremely firm; few very fine roots; few cracks filled with very dark gray (10YR 3/1) clay; common coarse grooved slickensides; 3 percent fine and medium concretions and masses of calcium carbonate; few rounded pebbles; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss2—43 to 63 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; weak prismatic structure parting to moderate medium angular blocky; extremely hard, extremely firm; few very fine roots; common medium grooved slickensides; few medium distinct yellowish brown (10YR 5/8) masses of iron in ped interiors; 6 percent fine and medium concretions of calcium carbonate; few fine crystals of gypsum; few rounded pebbles; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss3—63 to 72 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; weak coarse subangular blocky structure; extremely hard, extremely firm; few fine roots; few slickensides, few very dark brown (10YR 2/2) iron-manganese stains; common medium prominent strong brown (7.5YR 5/8) masses of iron in ped interiors; 8 percent fine concretions of calcium carbonate; few fine and medium crystals gypsum; strongly effervescent; moderately alkaline; gradual wavy boundary.

BC—72 to 80 inches; light gray (5Y 7/2) clay, light olive gray (5Y 6/2) moist; common fine and medium prominent yellowish brown (10YR 5/8) mottles; weak coarse angular blocky structure; extremely hard, extremely firm; few fine crystals of gypsum; strongly effervescent, moderately alkaline.

The solum thickness is more than 80 inches. When dry, cracks from ½ inch to 2 inches wide extend from surface to a depth of more than 20 inches. Average clay content in the control section ranges from 45 to 60 percent. Slickensides begin at about 10 inches below the surface. When dry, the surface has a ¼ inch to ½ inch thick granular mulch. Reaction is slightly alkaline or moderately alkaline.

The A horizon has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 or less. Masses of iron in shades of yellow or brown range from none to few. Iron depletions in shades of gray range from none to few. Vertical streaks of darker material are present in some pedons.

The Bss horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from none to few. Iron depletions in shades of gray range from none to few. Iron-manganese concretions range from none to few. Concretions and masses of calcium carbonate range from few to common. Calcium carbonate equivalent ranges from 10 to 20 percent.

The Bkss horizon has matrix colors similar to the Bss horizon. Masses of iron in shades of yellow or brown range from none to few. Iron depletions in shades of gray range from none to few. Concretions and masses of calcium carbonate range from common to many with amounts increasing with depth. Calcium carbonate equivalent ranges from 10 to 20 percent.

The BC horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from few to common. Masses, films, and concretions of calcium carbonate range from few to common. Crystals of gypsum range from none to few.

Ganado Series

The Ganado series consists of very deep, nearly level, moderately well drained, very slowly permeable soils on flood plains. These soils formed in clayey alluvium. Slopes are 0 to 1 percent. Soils of the Ganado series are fine, smectitic, hyperthermic Typic Hapluderts.

Typical pedon of Ganado clay, frequently flooded; from the intersection of Farm Road 2067 and U.S. Highway 183, 1.7 miles southwest on Farm Road 2067, and 100 feet west in rangeland. USGS Hochheim topographic quadrangle; lat. 29 degrees 21 minutes 56 seconds N. and long. 97 degrees 22 minutes 16 seconds W.

A—0 to 13 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium subangular blocky structure; very hard, very firm; many very fine and fine roots; few pressure faces; neutral; abrupt smooth boundary.

Bss1—13 to 35 inches; very dark gray(10YR 3/1) clay, black (10YR 2/1) moist; moderate medium angular blocky structure; very hard, very firm; many very fine and fine roots; common thick seams of pale brown (10YR 6/3) loam along cracks that are ½ to 1 inch wide; common grooved slickensides; neutral; gradual wavy boundary.

Bss2—35 to 59 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; strong medium angular blocky structure; very hard, very firm; few very fine and fine roots; common grooved slickensides; slightly effervescent; moderately alkaline; gradual wavy boundary.

Bssy—59 to 68 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium angular blocky structure; very hard, very firm; common fine roots; common slickensides; 3 percent threads of gypsum on faces of peds; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Bkssy—68 to 80 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine angular blocky structure; very hard, firm; few thin loamy strata between peds; common slickensides; 5 percent fine masses of calcium carbonate; 2 percent threads of gypsum on faces of peds; strongly effervescent; moderately alkaline.

The solum thickness is more than 80 inches. The 10- to 40-inch control section contains 40 to 60 percent clay. Some pedons have loamy strata below 50 inches. When dry, cracks 1 to 2 inches wide extend from the surface to depths of 40 inches or more. Slickensides begin at depths of 10 to 36 inches. Concretions and masses of calcium carbonate range from few to common below a depth of 25 inches in most pedons.

The A horizons have hue of 10YR, value of 2 or 3, and chroma of 1 or less. Reaction is neutral to moderately alkaline.

The Bss horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from none to few. Reaction is neutral to moderately alkaline.

The Bssy horizon has similar colors and features as the Bss horizon with the addition of few to common threads of gypsum along faces of peds. Reaction ranges from neutral to moderately alkaline.

The 2Bkssy horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or less. Concretions, masses, and threads of calcium carbonate range from few to common. Threads of gypsum along faces of peds range from few to common. Reaction is slightly alkaline or moderately alkaline.

Gholson Series

The Gholson series consists of very deep, very gently sloping and gently sloping, well drained, moderately permeable soils on terraces. These soils formed in loamy alluvial materials. Slope ranges from 1 to 5 percent. Soils of the Gholson series are fine-loamy, siliceous, active, thermic Udic Haplustalfs.

Typical pedon of Gholson loamy fine sand, 1 to 5 percent slopes; about 4 miles north of Gonzales from the intersection of U.S. Highway 183 and U.S. Highway 90A in Gonzales; 3.0 miles north along U.S. Highway 183, 1.4 miles west on county road, 2,000 feet northwest, and 1,800 feet southwest in pasture. USGS Ottine topographic quadrangle; lat. 29 degrees 32 minutes 5.89 seconds N. and long. 97 degrees 30 minutes 2.09 seconds W.

A—0 to 12 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable; many fine and common medium roots; common very fine pores; few fine rounded siliceous pebbles; slightly acid; clear smooth boundary.

Bt1—12 to 24 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium angular blocky structure; hard, firm; many fine and few medium roots; few clay films on faces of peds; few thin streaks of reddish brown (5YR 4/4) loamy material; common wormcasts; few fine rounded siliceous pebbles; neutral; clear smooth boundary.

Bt2—24 to 45 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; weak medium angular blocky structure; hard, firm; common fine and few medium roots; common very fine and fine pores; common fine prominent red (2.5YR 5/8) and faint yellowish red (5YR 5/8) masses of iron in ped interiors; common distinct clay films on faces of peds; few wormcasts; few fine rounded siliceous pebbles; neutral; clear smooth boundary.

Bt3—45 to 62 inches; reddish yellow (5YR 6/6) sandy clay loam, yellowish red (5YR 5/6) moist; weak coarse angular blocky structure; hard, firm; few fine roots; few very fine and fine pores; few clay films on faces of peds; few fine and medium rounded siliceous pebbles; neutral; clear smooth boundary.

BCt—62 to 80 inches; reddish yellow (7.5YR 6/8) fine sandy loam, strong brown (7.5YR 5/8) moist; hard, friable; few clay films on faces of peds; few fine and medium rounded siliceous pebbles; neutral.

The solum thickness ranges from 60 to more than 80 inches. The clay content of the control section ranges from 20 to 30 percent. Small siliceous pebbles range from 0 to 3 percent throughout.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Reaction is slightly acid or neutral.

The Bt horizon has hue of 5YR, value of 4 to 6, and chroma of 4 to 6. Texture is sandy clay loam or clay loam with clay content of about 20 to 35 percent. Masses of iron in shades of red, yellow, or brown range from none to few. Reaction ranges from slightly acid to slightly alkaline.

The BCt horizon has hue of 5YR to 7.5YR, value of 4 to 6, and chroma of 6 or 8. Reaction ranges from neutral to moderately alkaline.

The C horizon, where present, has hue of 7.5YR, value of 5 or 6, and chroma of 4 to 8. This horizon is fine sandy loam or sandy clay loam with or without strata of loamy fine sand. Some pedons have gravelly layers below 60 inches.

Gillett Series

The Gillett series consists of soils that are moderately deep to sandstone. They are gently sloping to moderately steep, well drained, slowly permeable soils on uplands. These soils formed in loamy and clayey sediments over noncemented sandstone. Slope ranges from 1 to 20 percent. Soils of the Gillett series are fine, smectitic, hyperthermic Typic Paleustalfs.

Typical pedon of Gillett fine sandy loam, 1 to 5 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 1.0 mile south on

Farm Road 108, 6.1 miles southwest on County Road 211, and 100 feet east in rangeland. USGS Bald Mound topographic quadrangle; lat. 29 degrees 10 minutes 40 seconds N. and long. 97 degrees 39 minutes 32 seconds W.

A—0 to 5 inches; grayish brown (10YR 5/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; very hard; friable; common fine and few medium roots; few sandstone pebbles; neutral; abrupt smooth boundary.

Bt1—5 to 13 inches; brown (7.5YR 5/3) clay, brown (7.5YR 4/3) moist; moderate fine prismatic structure parting to moderate fine and medium angular blocky; extremely hard, extremely firm; few fine and medium roots; common clay films on faces of peds; few fine distinct reddish brown (5YR 4/4) masses of iron on faces of peds; few sandstone pebbles; slightly alkaline; gradual smooth boundary.

Bt2—13 to 27 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; moderate fine prismatic structure parting to moderate fine and medium angular blocky; very hard, very firm; few fine roots; common clay films on faces of peds; few thin masses of calcium carbonate in lower part of layer; few sandstone pebbles; slightly alkaline; gradual smooth boundary.

2BCtk—27 to 34 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak medium and coarse subangular blocky structure; hard, firm; few fine roots; few clay films on surfaces of peds; 2 percent fine masses and films of calcium carbonate; few fine prominent yellow masses of iron on faces of peds; 10 percent sandstone pebbles; moderately alkaline; gradual smooth boundary.

2Cd—34 to 80 inches; light gray (2.5Y 7/2) noncemented sandstone with texture of fine sandy loam, light gray (2.5Y 7/2) moist; massive; very hard, very firm; sandstone fragments slake in water; moderately alkaline.

The solum thickness ranges from 20 to 40 inches. The clay content in the control section ranges from 40 to 55 percent. Masses of calcium carbonate are between 18 and 27 inches.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The content of siliceous pebbles range from 2 to 5 percent. Reaction is slightly acid or neutral.

The Bt horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. Texture is sandy clay, clay loam, or clay. Masses of iron in shades of red, yellow, or brown range from none to few. Siliceous pebbles range from 0 to 5 percent. Some pedons have a Btk horizon with similar colors and textures. Reaction ranges from slightly acid to slightly alkaline.

The 2BCtk horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. Texture is sandy clay loam, gravelly sandy clay loam, or gravelly sandy clay. Masses of iron concentrations in shades of yellow or brown range from few to common. Masses of calcium carbonate range from 2 to 5 percent. Reaction is slightly alkaline or moderately alkaline.

The 2Cd horizon is noncemented sandstone that has fine sandy loam texture. It has hue of 10YR or 2.5Y, value of 6 to 8, and chroma of 1 or 2. Mottles in shades of yellow and brown range from none to few. Masses of calcium carbonate range from 0 to 2 percent. This material slakes in water. Reaction is neutral to moderately alkaline.

Greenvine Series

The Greenvine series consists of soils that are moderately deep to sandstone. They are very gently sloping to gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in residuum from tuffaceous clays and sandstone’s. Slope ranges from 1 to 5 percent. Soils of the Greenvine series are Fine, smectitic, thermic Leptic Udic Haplusterts.

Typical pedon of Greenvine clay, 1 to 3 percent slopes; from the intersection of U.S. Highway 183 and Farm Road 2067, 7.0 miles south on Farm Road 2067, 2.6 miles west and 1.0 mile northwest on county road, and 1,500 feet east in pastureland. USGS Cheapside topographic quadrangle lat. 29 degrees 17 minutes 1.0 seconds N. and long. 97 degrees 26 minutes 39.0 seconds W.

A1—0 to 8 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak fine subangular blocky structure; extremely hard, extremely firm; many very fine, fine and common medium roots; many fine pores; few krotovinas; few cracks 1¼ inch wide; few pressure faces; neutral; clear smooth boundary.

A2—8 to 12 inches; dark gray (10YR 4/1) clay, black (10YR 2/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; common fine roots; few fine pores; few vertical cracks up to ½ inch wide; few pressure faces; few fine masses of calcium carbonate, slightly alkaline; gradual wavy boundary.

Bss1—12 to 28 inches; dark gray (10YR 4/1) clay, black (10YR 2/1) moist; coarse prismatic structure parting to moderate medium angular blocky structure; extremely hard, extremely firm; few fine roots; few fine pores; common vertical cracks up to ½ inch wide; common coarse grooved slickensides in lower part of layer; few fine masses of calcium carbonate; slightly alkaline; gradual wavy boundary.

Bss2—28 to 38 inches; gray (10YR 6/1) clay, dark gray (10YR 4/1) moist; weak medium angular blocky structure; extremely hard, extremely firm; few very fine roots; few cracks up to ¼ inch wide filled with black (10YR 2/1) clay; few medium grooved slickensides; common fine crystals of gypsum; few fine masses of calcium carbonate; common fine and medium prominent reddish yellow (7.5YR 6/8) and light brown (7.5YR 6/4) masses of iron along faces of peds; slightly alkaline; clear wavy boundary.

Cr—38 to 80 inches; pale yellow (5Y 8/2) weakly cemented clayey tuff with clay texture, light gray (5Y 7/2) moist; common fine and medium prominent strong brown (7.5YR 5/8) mottles; massive; extremely hard, extremely firm; few black (10YR 2/1) iron-manganese stains; few fine crystals of gypsum; slightly alkaline.

The solum thickness and depth to paralithic contact ranges from 20 to 40 inches. Slickensides range from few to common and begin at a depth of 15 inches. Pressure faces begin at a depth of 8 to 15 inches. When dry, cracks up to 2 inches wide extend from the surface to a depth of 20 inches or more.

The A horizon has hue of 10YR, value of 2 to 4, and chroma 1 or less. Siliceous pebbles range from none to few. Reaction ranges from strongly acid to slightly alkaline.

The Bss horizon has hue of 10YR, value of 4 or 6, and chroma of 1 or 2. Masses of iron in shades of red, yellow, or brown range from none to few. Texture is clay or silty clay. Reaction is neutral to moderately alkaline. Crystals of gypsum range from none to common.

Some pedons have a BCk horizon with similar colors and textures. This horizon has few to common concretions and masses of calcium carbonate and is calcareous.

The Cr horizon has hue of 5Y, value of 7 or 8, and chroma of 2 or 3. It is weakly cemented clayey tuff, clayey shale, or fine grained tuffaceous sandstone. Some pedons have a few mottles in shades of brown.

Griter Series

The Griter series (fig. 25) consists of soils that are deep to sandstone. They are very gently sloping and gently sloping, well drained, slowly permeable soils on uplands. These soils formed in clayey and loamy sediments. Slope ranges from 1 to

5 percent. Soils of the Griter series are fine, mixed, superactive, hyperthermic Typic Paleustalfs.

Typical pedon of Griter fine sandy loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Texas Highway 80 in Nixon, 5.0 miles south on Texas Highway 80 to the intersection with City of Nixon 8th Street, 3.0 miles east on 8th Street until it merges into county road, 2.5 miles southeast, 0.5 mile east, 0.6 mile north, 0.7 mile south on county road, 0.3 mile east on ranch road, and 50 feet north in rangeland. USGS Bald Mound topographic quadrangle; lat. 29 degrees 14 minutes 20 seconds N. and long. 97 degrees 42 minutes 20 seconds W.

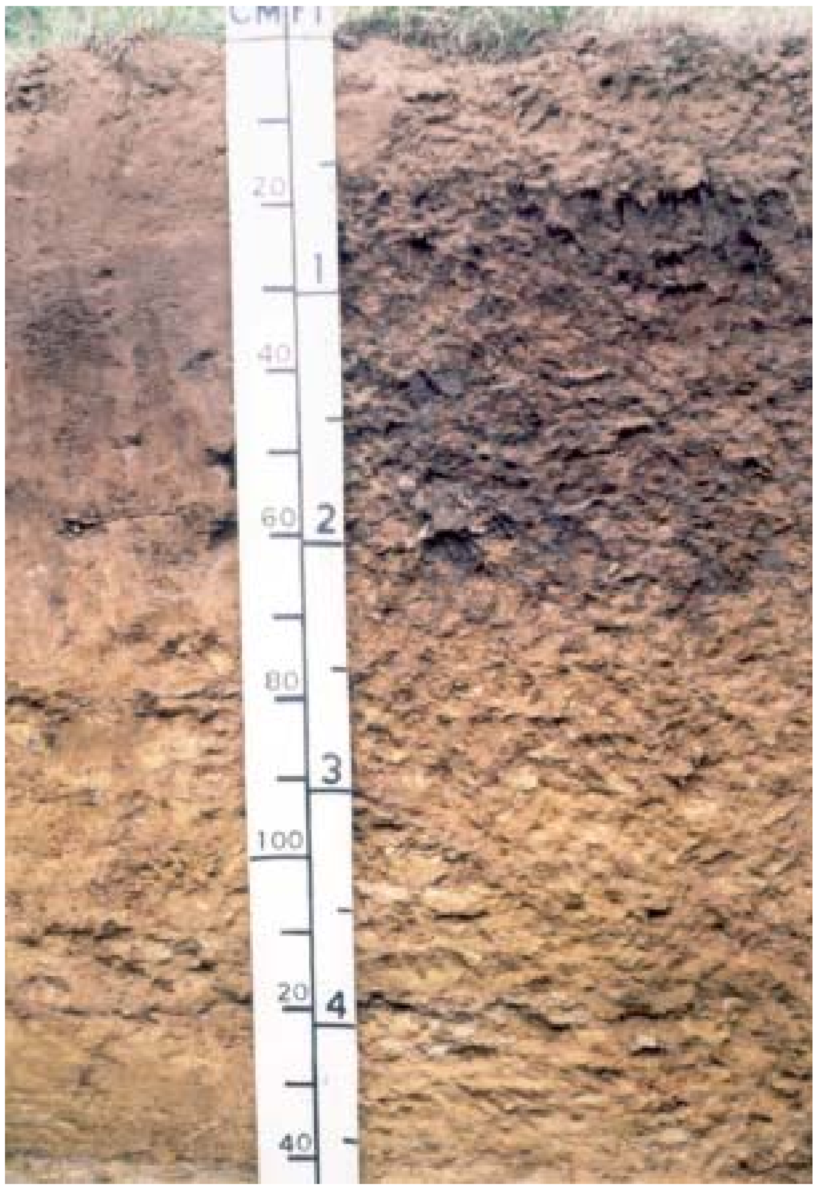

Figure 25.—A profile of Griter fine sandy loam, 1 to 3 percent slopes. The C horizon, at a depth of 56 inches is sandy clay loam with few thin layers of weakly cemented sandstone.

A—0 to 7 inches; brown (7.5YR 5/3) fine sandy loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable; many very fine, fine, and medium roots; common fine pores; few siliceous pebbles; few wormcasts; neutral; abrupt smooth boundary.

Bt1—7 to 16 inches; reddish brown (2.5YR 4/4) sandy clay, dark reddish brown (2.5YR 3/4) moist; weak coarse prismatic structure parting to weak medium and coarse angular blocky; very hard, very firm; many very fine, fine, and few medium roots; common fine pores; few pressure faces; few clay films on faces of peds; common fine faint reddish brown (2.5YR 5/4) masses of iron on faces of peds; few wormcasts; few chert pebbles; neutral; gradual smooth boundary.

Bt2—16 to 27 inches; red (2.5YR 4/6) sandy clay, dark red (2.5YR 3/6) moist; weak very coarse prismatic structure parting to weak medium subangular blocky; very hard, very firm; common very fine and fine roots; common fine pores; few clay films on faces of peds; common medium distinct yellowish red (5YR 4/6) and common fine distinct strong brown (7.5YR 5/6) masses of iron on faces of peds; few chert pebbles; neutral; gradual smooth boundary.

Bt3—27 to 37 inches; light red (2.5YR 6/6) sandy clay loam, red (2.5YR 5/6) moist; weak very coarse prismatic structure parting to weak medium subangular blocky; hard, firm; common very fine and fine roots; common fine pores; few clay films on horizontal faces of peds; few iron stains on faces of peds; few fine concretions of calcium carbonate; few fine concretions of ironstone; common medium prominent yellowish red (5YR 4/6) masses of iron on faces of peds; slightly alkaline; gradual smooth boundary.

BCt1—37 to 51 inches; reddish yellow (5YR 6/6) sandy clay loam, yellowish red (5YR 5/6) moist; weak very coarse prismatic structure parting to weak medium and coarse subangular blocky; hard, firm; few very fine roots; common fine pores; few clay films on surfaces of peds and in pores; few iron stains on surfaces of peds; ¼ inch thick layer of weakly cemented sandstone between this layer and the BCt2 layer; few fine concretions of calcium carbonates; few fine nodules of ironstone; common medium distinct reddish yellow (7.5YR 6/6) and strong brown (7.5YR 5/6) masses of iron in ped interiors; moderately alkaline; gradual smooth boundary.

BCt2—51 to 56 inches; mottled very pale brown (10YR 7/4), reddish yellow (7.5YR 6/6) and reddish yellow (5YR 6/8) sandy clay loam, very pale brown (10YR 7/3), strong brown (7.5YR 5/6), and yellowish red (5YR 5/8) moist; weak very coarse subangular blocky structure; hard, firm; common fine roots; few thin layers of weakly cemented sandstone throughout; few clay films on horizontal surfaces of peds; few iron stains on faces of peds; few fine brown iron-manganese concretions; few fine crystals of gypsum; moderately alkaline; gradual smooth boundary.

C—56 to 80 inches; very pale brown (10YR 7/3) sandy clay loam, very pale brown (10YR 7/3) moist; massive; hard, firm; common very fine roots; few thin layers of weakly cemented sandstone; very few iron stains on upper faces of peds; few fine brown iron-manganese concretions; few fine gypsum crystals; moderately alkaline.

The solum thickness ranges from 40 to 60 inches. The clay content of the control section ranges from 35 to 50 percent. Base saturation of the argillic horizon ranges from 75 to 95 percent. Depth to secondary carbonates ranges from 25 to 40 inches. Concretions and masses of calcium carbonate range from 0 to 4 percent

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Reaction is slightly acid or neutral.

The upper Bt horizons have hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 2 to 6. Texture is sandy clay or clay. Masses of iron in shades of red, yellow, or brown range from none to few.

The lower Bt horizons have hue of 2.5YR to 10YR, value of 4 to 7, and chroma of 3 to 6. Texture is sandy clay loam or sandy clay. Masses of iron in shades of yellow or brown range from none to few. Reaction is neutral to moderately alkaline.

Some pedons have a Btk horizon that has similar colors and textures. Reaction is slightly alkaline or moderately alkaline.

The BCt or BC horizons have hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 2 to 8. Texture is sandy clay loam or sandy clay. Masses of iron in shades of red, yellow, or brown range from none to few. Reaction is slightly alkaline or moderately alkaline. Some pedons have a BCtk horizon with similar color, texture, and reaction. It has up to 5 percent masses of calcium carbonate.

The C horizon has hue of 5YR to 10YR, value of 5 to 8, and chroma of 2 to 4. Texture is fine sandy loam or sandy clay loam. Reaction is slightly alkaline or moderately alkaline.

Imogene Series

The Imogene series consists of very deep, nearly level, moderately well drained, very slowly permeable soils on low stream terraces and upland plains. These soils formed in saline calcareous sediments. Slope are 0 to 1 percent. Soils of the Imogene series are fine-loamy, mixed, superactive, hyperthermic Mollic Natrustalfs.

Typical pedon of Imogene fine sandy loam, 0 to 1 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 1.1 miles south on Farm Road 108, 1.8 miles southwest on county road to ranch road, 0.7 mile west on ranch road, and 0.9 mile north in rangeland. USGS Bald Mound topographic quadrangle; lat. 29 degrees 14 minutes 13 seconds N. and the long. 97 degrees 40 minutes 19 seconds W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; massive; hard, friable; few very fine and fine roots; slightly alkaline; abrupt smooth boundary.

Btnz1—4 to 8 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse columnar structure parting to moderate medium angular blocky; very hard; firm; few fine roots; few fine faint brown masses of iron on faces of peds; common thin clay films on faces of peds; few fine salt threads; moderately alkaline; clear smooth boundary.

Btnz2—8 to 16 inches; dark gray (10YR 4/1) sandy clay loam, very dark gray (10YR 3/1) moist; weak coarse columnar structure parting to moderate medium angular blocky; hard, firm; few fine roots; common thin clay films on faces of peds; many fine salt threads; moderately alkaline; gradual smooth boundary.

Btnz3—16 to 38 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; hard, firm; few thin clay films on faces of peds; common fine salt threads; moderately alkaline; gradual smooth boundary.

Btknz—38 to 47 inches; grayish brown (10YR 5/2) clay loam, grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; hard, firm; 2 percent fine rounded concretions of calcium carbonate; few fine salt threads; moderately alkaline; gradual smooth boundary.

BCnz—47 to 68 inches; light gray (2.5Y 7/2) sandy clay loam, light brownish gray (2.5Y 6/2) moist; weak medium and coarse subangular blocky structure; hard, firm; common fine distinct yellow (10YR 7/8) masses of iron on faces of peds; few threads of salts; few fine and medium prominent brown (10YR 4/3) masses of iron-manganese accumulation; moderately alkaline; clear smooth boundary.

C—68 to 80 inches; light gray (2.5Y 7/2) fine sandy loam, light brownish gray (2.5Y 6/2) moist; massive; slightly hard; friable; moderately alkaline.

The solum thickness ranges from 60 to more than 80 inches. Reaction ranges from neutral to strongly alkaline. The clay content in the control section ranges from 20 to 40 percent. Sodium absorption ratio is 13 or more in the B and BC horizons.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The upper 7 inches of soil when moistened has value of 3 or less. Salinity ranges from 0 to 4 dS/m and the sodium adsorption ratio ranges from 15 to 30.

The Btnz horizons have hue of 10YR, value of 3 to 5, and chroma of 1 to 4. Texture is sandy clay loam, clay loam, or sandy clay. Masses of iron in shades of brown or yellow range from none to few. Salinity ranges from 4 to 40 dS/m. Sodium adsorption ratio ranges from 15 to 100.

The Btknz has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. Texture is sandy clay loam, sandy clay, or clay loam. Concretions of calcium carbonate range from 2 to 5 percent. Salinity ranges from 4 to 20 dS/m and the sodium adsorption ratio ranges from 20 to 100.

The BCnz horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 2 to 3. Masses of iron in shades of yellow or brown range from none to few. Salinity ranges from 4 to 16 dS/m and the sodium adsorption ratio ranges from 20 to 100.

The C horizon has hue of 2.5Y, value of 6 or 7, and chroma of 2 to 4. Texture is fine sandy loam or sandy clay loam. Salinity ranges from 4 to 20 dS/m and the sodium adsorption ratio ranges from 15 to 90.

Jedd Series

The Jedd series consists of soils that are moderately deep to sandstone. They are gently sloping to moderately steep, well drained, moderately slowly permeable soils on uplands. They formed in weakly cemented, acid sandstone. Slope ranges from 3 to 15 percent. Soils of the Jedd series are fine, mixed, semiactive, thermic Ultic Paleustalfs.

Typical pedon of Jedd gravelly fine sandy loam, 3 to 5 percent slopes; from the intersection of Farm Road 1296 and Farm Road 1115 in Waelder, 4.1 miles northwest on Farm Road 1296, and 300 feet east in rangeland. USGS Jeddo topographic quadrangle; lat. 29 degrees 46 seconds 9 minutes N. and long. 97 degrees 18 minutes 53 seconds W.

A—0 to 7 inches; brown (10YR 5/3) gravelly fine sandy loam, brown (10YR 4/3) moist; weak fine granular structure; slightly hard, very friable; common fine, medium and few coarse roots; 18 percent fine and medium ironstones pebbles; slightly acid; clear smooth boundary.

E—7 to 12 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 5/3) moist; weak fine granular structure; slightly hard, friable; few fine, medium, and coarse roots; 16 percent fine and medium ironstone pebbles; slightly acid; abrupt smooth boundary.

Bt1—12 to 23 inches; red (2.5YR 4/6) clay, dark red (2.5YR 3/6) moist; moderately fine and medium subangular blocky structure; very hard, extremely firm; few fine, medium, and coarse roots; few pockets of yellowish brown (10YR 5/6) materials; few clay films on faces of peds; few fine and medium ironstone pebbles; moderately acid; gradual smooth boundary.

Bt2—23 to 30 inches; red (2.5YR 5/8) clay, red (2.5YR 4/8) moist; moderate medium subangular blocky structure; very hard; very firm; few fine and medium roots; few light brownish gray clay films on faces of peds; few medium prominent yellowish brown (10YR 5/6) masses of iron in ped interiors; few ironstone pebbles; moderately acid; gradual smooth boundary.

Bt3—30 to 37 inches; red (2.5YR 5/8) sandy clay, red (2.5YR 4/8) moist; weak medium and coarse subangular blocky structure; hard, firm; few fine roots; few clay films on faces of peds; few light brownish gray (10YR 6/2) fragments of shale; few fragments of strong brown (7.5YR 5/6) weakly cemented sandstone; strongly acid; clear smooth boundary.

Cr—37 to 80 inches, light gray (10YR 7/2) weakly cemented sandstone that has fine sandy loam texture; light brownish gray (10YR 6/2) moist; few fine distinct strong brown (7.5YR 5/6) mottles; massive; extremely hard; friable; few interbedded gray fragments of shale; strongly acid.

The solum thickness and depth to stratified sandstone is 20 to 40 inches. The clay content in the control section ranges from 35 to 50 percent. The base saturation of argillic horizon ranges from 40 to 65 percent. Fragments of sandstone and ironstone range from 4 inches to about 48 inches across and cover 5 to 25 percent of the surface.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 4. The E horizon has values 1 to 2 units greater than the A horizon. Sandstone and ironstone gravels and cobbles range from 15 to 30 percent. Reaction ranges from moderately acid to neutral.

The Bt horizon has a hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8. Texture is sandy clay or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction ranges from very strongly acid to moderately acid.

The Cr horizon is weakly cemented sandstone. It has colors in shades of red, yellow, brown, or gray and contains few pockets or strata of fine sandy loam or sandy clay loam. Interbedded shale fragments range from none to few. The material becomes strongly cemented when exposed in road cuts.

Kurten Series

The Kurten series consists of soils that are deep to weathered shale. They are very gently sloping and gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in shale and clayey sediments. Slope ranges from 2 to 5 percent. Soils of the Kurten series are fine, smectitic, thermic Udertic Paleustalfs.

Typical pedon of Kurten fine sandy loam, 2 to 5 percent slopes; from the intersection of Interstate Highway 10 and Texas Highway 97, 1.2 miles south of Waelder, 0.15 mile south on Texas Highway 97, and 100 feet west in rangeland. USGS Waelder topographic quadrangle; lat. 29 degrees 40 minutes 02 seconds N. and long. 97 degrees 18 minutes 19 seconds W.

A—0 to 5 inches; light brownish gray (10YR 6/2) fine sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; hard, friable; many very fine and common fine roots; common fine prominent strong brown (7.5YR 5/6) masses of iron in ped interiors; slightly acid; abrupt smooth boundary.

Bt—5 to 12 inches; red (2.5YR 5/6) clay, red (2.5YR 4/6) moist; moderate medium angular blocky structure; very hard, very firm; common very fine and few fine roots; few vertical cracks ½ inch wide; few pressure faces; few clay films on faces of peds; common fine prominent brown (7.5YR 4/4) masses of iron in ped interiors; strongly acid; gradual wavy boundary.

Btss1—12 to 24 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few very fine roots; few vertical cracks ¼ to ½ inch wide; common slickensides and pressure faces; few clay films on faces of peds; few fine distinct brown (7.5YR 4/4) masses of iron in ped interiors; strongly acid; gradual wavy boundary.

Btss2—24 to 35 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few very fine and fine roots; common slickensides and pressure faces; few clay films on faces of peds; few fine concretions of calcium carbonate; moderately acid; gradual wavy boundary.

Btss3—35 to 45 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; extremely hard, extremely firm; few dark gray vertical streaks; few slickensides and pressure faces; few clay films on faces of peds; few fine concretions of calcium carbonate; few pebbles; very slightly effervescent; neutral; gradual wavy boundary.

BCt—45 to 50 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; moderate medium subangular blocky structure; extremely hard, extremely firm; few clay films on vertical and horizontal faces of peds; few fine concretions of calcium carbonate; common medium prominent yellow (2.5Y 7/8) and few fine prominent strong brown (7.5YR 5/8) masses of iron in ped interiors; strongly effervescent; neutral; gradual wavy boundary.

Cy1—50 to 65 inches; pale yellow (2.5Y 8/2) shale that has a texture of clay loam, light gray (2.5Y 7/2) moist; few medium prominent yellow (2.5Y 7/8) mottles; massive; extremely hard, extremely firm; 5 percent fine irregular crystals of gypsum; neutral; gradual wavy boundary.

Cy2—65 to 80 inches; pale yellow (2.5Y 8/4) shale that has a texture of clay loam, pale yellow (2.5Y 7/4) moist; few medium prominent yellow (10YR 7/8) mottles; massive; extremely hard, extremely firm; 4 percent fine rounded crystals of gypsum; neutral.

The thickness of the solum ranges from 40 to 60 inches. The boundary between the A and Bt horizons is abrupt over the subsoil crests and clear over the subsoil troughs. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches. The clay content in the control section ranges from 40 to 60 percent. Slickensides and pressure faces range from few to common in the upper 45 inches of the subsoil.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. Some pedons have few siliceous or ironstone pebbles. Reaction is moderately acid or slightly acid.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 or 6, and chroma of 4 to 6. Texture is clay loam or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Crystals of gypsum range from 0 to 5 percent. Reaction ranges from very strongly acid to moderately acid. Base saturation is 35 to 75 percent.

The Btss horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 6. Texture is clay loam or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Crystals of gypsum range from 0 to 5 percent. Reaction ranges from very strongly acid to slightly alkaline.

The BCt horizons are in shades of red, yellow, brown, or gray. Texture is clay loam or clay. Masses of iron in shades of red, yellow, or brown range from few to common. It has few to common crystals of gypsum. Concretions of calcium carbonate range from none to few. Reaction ranges from very strongly acid to neutral.

The Cy horizons are in shades of red, yellow, brown, or gray. The material is shale that has a texture of clay or clay loam. Mottles in shades of red, yellow, or brown range from none to few. It has 1 to 6 percent crystals of gypsum. Concretions of calcium carbonate range from 0 to 5 percent. Reaction ranges from slightly acid to slightly alkaline.

Leming Series

The Leming series consists of very deep, nearly level and very gently sloping, moderately well drained, slowly permeable soils on uplands. These soils formed in ancient alluvium. Slope ranges from 0 to 3 percent. Soils of the Leming series are clayey, mixed, active, hyperthermic Arenic Paleustalfs.

Typical pedon of Leming loamy fine sand, 0 to 3 percent slopes; from the intersection of U.S. Highway 87 and Texas Highway 80 in Nixon, 0.5 mile south on Texas Highway 80 to 8th Street, 0.3 miles east on 8th Street to county road, 2.5 miles southeast on county road, 0.5 mile east on county road, 0.6 mile northeast on county road, 0.8 mile south on county road, and 200 feet east in rangeland. USGS Bald Mound topographic quadrangle; lat. 29 degrees 13 minutes 55 seconds N. and the long. 97 degrees 42 minutes 25 seconds W.

A—0 to 15 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; single grain; loose, very friable; common fine and few medium roots; slightly acid; clear smooth boundary.

E—15 to 29 inches; pale brown (10YR 6/3) loamy fine, brown (10YR 5/3) moist; single grain; loose, very friable; few very fine and fine roots; slightly acid; abrupt smooth boundary.

Bt1—29 to 41 inches; light brownish gray (10YR 6/2) sandy clay, grayish brown (10YR 5/2) moist; weak fine prismatic structure parting to moderate fine and medium angular blocky; very hard, very firm; few fine and medium roots; common thick clay films on faces of peds; common fine and medium faint gray (10YR 5/1) iron depletions along root channels and on faces of peds; common fine prominent red (2.5YR 4/8), and common distinct yellow (10YR 7/8) masses of iron in ped interiors; slightly acid; gradual smooth boundary.

Bt2—41 to 49 inches; very pale brown (10YR 7/3) sandy clay, pale brown (10YR 6/3) moist; moderate fine and medium prismatic structure parting to moderate medium angular blocky; very hard, very firm; few fine roots; common thick clay films on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions along root channels and on faces of peds; many medium and coarse prominent red (2.5YR 4/6) and few distinct yellow (10YR 7/8) masses of iron in ped interiors; slightly acid; gradual wavy boundary.

Bt3—49 to 60 inches; very pale brown (10YR 7/3) sandy clay loam, very pale brown (10YR 7/3) moist; moderate medium prismatic structure parting to moderate angular blocky; hard, firm; few fine roots; common thin clay films on faces of peds; few fine distinct gray (10YR 5/1) iron depletions along root channels and on faces of peds; common medium and coarse prominent yellowish red (5YR 5/8) masses of iron in ped interiors; slightly acid; gradual wavy boundary.

Bt4—60 to 66 inches; very pale brown (10YR 7/4) sandy clay loam, very pale brown (10YR 7/3) moist; weak medium and coarse prismatic structure parting to weak medium moderate and coarse angular blocky; hard, firm; few clay films on faces of peds; few fine distinct dark brown (10YR 3/3) masses of iron on faces of peds; few siliceous pebbles; slightly acid; gradual smooth boundary.

Bt5—66 to 80 inches; very pale brown (10YR 8/4) sandy clay loam, very pale brown (10YR 7/4) moist; weak coarse subangular blocky structure; hard, firm; few clay films on faces of peds; few fine distinct (10YR 7/8) yellow masses of iron on faces of peds; slightly acid.

The solum thickness is more than 80 inches. The clay content in the control section ranges from 35 to 50 percent.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The E horizon is 1 or 2 units of value higher in color than the A horizon. Reaction is slightly acid or neutral.

The Bt horizon has hue of 10YR, value of 5 to 8, and chroma of 2 to 4. Texture in the upper part of the Bt horizon is sandy clay or clay. The texture in the lower part of the Bt horizon is sandy clay loam or sandy clay. Masses of iron in shades of red, yellow, or brown range from few to common. Iron depletions in shades of gray range from few to common. Concretions of iron-manganese range from few to common. Masses of calcium carbonate range from 0 to 10 percent. Reaction ranges from slightly acid to slightly alkaline.

Luckenbach Series

The Luckenbach series consists of very deep, nearly level and very gently sloping, well drained, moderately slowly permeable soils on stream terraces. These soils formed in loamy and clayey alluvium as well as local materials. Slope ranges from 0 to 3 percent. Soils of the Luckenbach series are fine, mixed, superactive, thermic Typic Argiustolls.

Typical pedon of Luckenbach sandy clay loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 183 and U.S. Highway 90A in Gonzales, 3.7 miles southwest on U.S. Highway 90A, 1.3 miles south on Farm Road 2091, 1.0 mile west on county road to ranch entrance, 0.7 miles south on private ranch road, and 250 feet west of road in pasture. USGS Cost topographic quadrangle; lat. 29 degrees 29 minutes 03 seconds N. and long. 97 degrees 31 minutes 14 seconds W.

A—0 to 12 inches; very dark grayish brown (10YR 3/2) sandy clay loam, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; slightly hard, friable; many very fine and fine roots; common very fine and fine pores; neutral; clear smooth boundary.

Bt1—12 to 19 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable; common very fine and fine roots; common very fine and fine pores; few fine and medium distinct reddish brown (5YR 4/4) lenses of clay loam materials from underlying layer; few clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—19 to 26 inches; reddish brown (5YR 4/3) clay loam, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; hard, firm; common very fine and fine roots; few pressure faces, few clay films on faces of peds; common fine and medium distinct brown (7.5YR 4/4) masses of iron in ped interiors; 3 percent limestone pebbles; slightly alkaline; clear smooth boundary.

Bt3—26 to 33 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm; common very fine and fine roots; few clay films on faces of peds; few fine concretions of calcium carbonate; few fine distinct dark brown (10YR 3/3) masses of iron in ped interiors; few thin masses of calcium carbonate; 3 percent limestone pebbles; slightly effervescent; moderately alkaline; clear smooth boundary.

Btk—33 to 44 inches; reddish brown (5YR 5/4) clay, reddish brown (5YR 4/4) moist; weak fine and medium angular blocky structure; hard, firm; common very fine roots; few clay films on faces of peds; 6 percent fine and medium concretions of calcium carbonate; common fine and medium distinct yellowish red (5YR 5/8) masses of iron in ped interiors; 5 percent limestone pebbles; violently effervescent; moderately alkaline; clear smooth boundary.

Bk—44 to 80 inches; strong brown (7.5YR 5/6) clay loam, strong brown (7.5YR 4/6) moist; weak fine and medium angular blocky structure; hard, firm; common very fine roots; 8 percent fine and medium concretions of calcium carbonate; few fine distinct dark brown (10YR 3/3) masses of iron in ped interiors; 6 percent limestone pebbles; violently effervescent; moderately alkaline.

The solum is 60 to more than 80 inches thick and the mollic epipedon ranges from 12 to 19 inches thick. The clay content of the control section ranges from 35 to 55 percent. Secondary carbonates are within a depth of 20 to 28 inches.

The A horizon has hue of 7.5YR and 10YR, value of 3 or 4, and chroma of 2 or 3. Limestone and siliceous pebbles comprise 0 to 4 percent. Reaction ranges from slightly acid to slightly alkaline.

The Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is clay loam or clay. Masses of iron in shades of red, yellow, or brown range from none to common. Limestone and siliceous pebbles comprise 0 to 10 percent. Concretions and masses of calcium carbonate range from 0 to 10 percent. Reaction is slightly alkaline or moderately alkaline.

The Bk horizon hue of 7.5YR or 10YR, value of 4 to 7, chroma of 3 to 6. Texture is clay loam or clay. Masses of iron in shades of red, yellow, or brown range from none to few. Siliceous pebbles and fragments of limestone range from 5 to 15 percent. Concretions and masses of calcium carbonate range from 5 to 15 percent.

Reaction is moderately alkaline.

Luling Series

The Luling series (fig. 26) consists of soils that are very deep to weathered shale. They are very gently sloping and gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in alkaline weathered shale. Slope ranges from 1 to 5 percent. Soils of the Luling series are fine, smectitic, thermic Udic Haplusterts.

Typical pedon of Luling clay, 1 to 3 percent slopes; from the intersection of Farm Road 1296 and Farm Road 1115 in Waelder, 1.4 miles northwest of Farm Road 1296, 1.5 miles north on county road, and 130 feet east in cropland. USGS Waelder topographic quadrangle; lat. 29 degrees 18 minutes 10 seconds N. and long. 97 degrees 44 minutes 12 seconds W.

Ap—0 to 5 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; moderate fine angular blocky structure; very hard, very firm, many fine, medium, and coarse roots; few fine and medium ironstone pebbles; moderately alkaline; clear smooth boundary.

A—5 to 14 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium angular blocky structure that form wedge-shaped aggregates; very hard, very firm; common fine, medium, and coarse roots; few pressure faces; few fine ironstone pebbles; moderately alkaline; gradual wavy boundary.

Bss1—14 to 20 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; moderate medium angular blocky structure; very hard, very firm; few fine and medium roots; few cracks filled with very dark grayish brown materials; common grooved slickensides; few fine and medium ironstone pebbles; moderately alkaline; gradual wavy boundary.

Bss2—20 to 42 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate coarse angular blocky structure; very hard, very firm; few fine roots; few cracks ¼ to ½ inch wide; common slickensides; few fine and medium concretions of calcium carbonate; few fine ironstone pebbles; moderately alkaline; gradual wavy boundary.

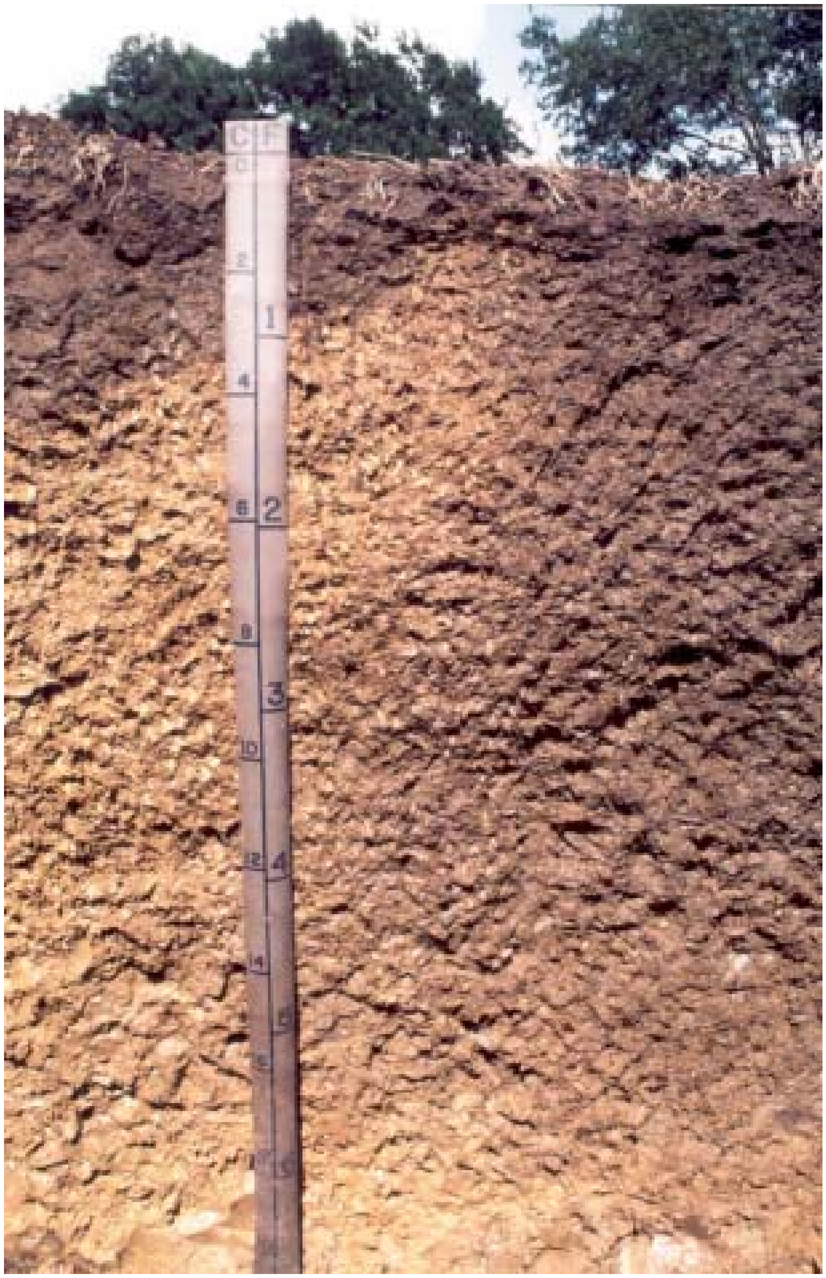

Figure 26.—A profile of Luling clay, 1 to 3 percent slopes. The clayey nature of the soil shows up in the shiny ped surfaces, also known as slickensides.

Bss3—42 to 53 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; moderate medium angular blocky structure; very hard, very firm; few fine roots; few brownish streaks; common slickensides; few medium concretions of calcium carbonate; moderately alkaline; gradual wavy boundary.

Bss4—53 to 63 inches; light yellowish brown (2.5Y 6/4) clay, light olive brown (2.5Y 5/4) moist; moderate fine angular blocky structure; very hard, very firm; few fine roots; few slickensides; few fine ironstone pebbles; moderately alkaline; gradual wavy boundary.

C—63 to 80 inches; yellow (10YR 7/8) weathered shale with clay texture, brownish yellow (10YR 6/8) moist; massive; very hard, very firm; interbedded with light gray (2.5Y 7/2) shale and reddish yellow (7.5YR 6/8) loamy material; few fine black concretions; moderately alkaline.

The solum thickness ranges from 60 to 75 inches. The content of clay ranges from 40 to 55 percent. Unless cultivated, gilgai microrelief commonly develops. When dry, surface cracks extend to a depth of more than 40 inches. Depth to slickensides ranges from 13 to 18 inches. Ironstone pebbles range from none to common throughout. Reaction ranges from neutral to moderately alkaline.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, chroma of 2 or 3.

The Bss horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. Masses of iron in shades of yellow or brown range from none to common. Iron depletions in shades of gray range from none to common.

The Bssk or Bssy horizons, where present, have similar colors and redoximorphic features as the Bss horizons. Concretions of calcium carbonate and crystals of gypsum range from few to common.

The C or Cy horizon has colors mainly in shades of yellow, brown, olive, or gray. The clay texture is interbedded with fragments of grayish shale or thin strata of reddish yellow sandstone. Crystals of gypsum range from none to common. Concretions of calcium carbonate range from none to few.

Mabank Series

The Mabank series consists of very deep, nearly level, moderately well drained, very slowly permeable soils on terraces or remnants of terraces associated with uplands. These soils formed in alkaline clays. Slope is 0 to 1 percent. Soils of the Mabank series are fine, smectitic, thermic Oxyaquic Vertic Paleustalfs.

Typical pedon of Mabank fine sandy loam, 0 to 1 percent slopes; from the intersection of U.S. Highway 183 and U.S. Highway 90A, in Gonzales, 6.5 miles north on U.S. Highway 183, 3 miles southwest on county road, and 900 feet east in pastureland. USGS Ottine topographic quadrangle; lat. 29 degrees 34 minutes 10 seconds N. and long. 97 degrees 31 minutes 43 seconds W.

A—0 to 7 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, firm; many very fine and few fine roots; few fine distinct yellowish brown (10YR 5/4) masses of iron along root channels; slightly acid; abrupt wavy boundary.

Bt—7 to 18 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium subangular blocky structure; very hard, very firm; few very fine roots; few pressure faces; few clay films on faces of peds; neutral; gradual wavy boundary.

Btssg1—18 to 29 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; very hard, very firm; few very fine roots; few cracks ½ inch wide with black material; common slickensides and few pressure faces; few clay films on faces of peds; slightly alkaline; gradual wavy boundary.

Btssg2—29 to 57 inches; gray (10YR 5/1) clay, dark gray (10YR 4/1) moist; moderate fine subangular blocky structure; very hard, very firm; few very fine roots; few slickensides and common pressure faces; few clay films on faces of peds; few fine iron-manganese concretions; few fine concretions of calcium carbonate; slightly effervescent; slightly alkaline; gradual wavy boundary.

Btyg—57 to 80 inches; light gray (10YR 7/2) clay, light brownish gray (10YR 6/2) moist; weak medium subangular blocky structure; very hard, very firm; few very fine roots; few dark gray vertical streaks; few pressure faces; few clay films on faces of peds; 5 percent fine concretions of calcium carbonate; few crystals of gypsum; strongly effervescent; common fine distinct yellow (10YR 7/8) masses of iron in ped interiors; moderately alkaline.

The solum thickness ranges from 60 to more than 80 inches. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches. The clay content in the control section ranges from 35 to 50 percent slickensides or pressure faces occur throughout the subsoil.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from none to few. Some pedons have few siliceous pebbles. Reaction ranges from moderately acid to neutral.

The Bt horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Reaction ranges from moderately acid to slightly alkaline.

The Btssg horizon has a hue of 10YR, value of 3 to 5, chroma of 1 or 2. Masses of iron in shades of yellow or brown range from none to common. Iron depletions in shades of gray range from none to common. Concretions and masses of calcium carbonate range from none to few. Crystals of gypsum range from none to few. Reaction ranges from moderately acid to moderately alkaline.

The Btyg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2. Masses of iron in shades of yellow or brown range from few to common. Iron depletions in shades of gray range from few to common. Some pedons have few concretions of iron-manganese. Reaction is slightly alkaline or moderately alkaline.

In some pedons below 60 inches a C horizon is present that has hue of 2.5Y, value of 7, and chroma of 2. It is clay with interbedded shale. Reaction is slightly acid to moderately alkaline.

Meguin Series

The Meguin series consists of very deep, nearly level, well drained, moderately permeable soils on flood plains. These soils formed in alkaline loamy alluvium. Slope is 0 to 1 percent. Soils of the Meguin series are fine-silty, mixed, superactive, hyperthermic Fluventic Haplustolls.

Typical pedon of Meguin silty clay loam, 0 to 1 percent slopes, occasionally flooded; from the intersection of U.S. Highway 90A and Texas Highway 97 in Gonzales, Texas; 5.7 miles east on U.S. Highway 90A to intersection with County Road 345, 4.0 miles south and east on County Road 345, 800 feet east, then 1.0 mile south on ranch road, and 1,000 feet east in pastureland. USGS Hamon topographic quadrangle; lat. 29 degrees 25 minutes 53 seconds N. and the long. 97 degrees 19 minutes and 19 seconds W.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silty clay loam, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure; hard, firm; many very fine and few fine roots; common wormcasts; 30 percent calcium carbonate equivalent; few fragments of snail shells; strongly effervescent; moderately alkaline; clear smooth boundary.

A—8 to 16 inches; dark gray (10YR 4/1) silty clay loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure; slightly hard, friable; common very fine and few fine roots; common wormcasts; 25 percent calcium carbonate equivalent; few fragments of snail shells; strongly effervescent; moderately alkaline; clear smooth boundary.

Bw—16 to 29 inches; brown (10YR 5/3) silt clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable; common very fine roots; few wormcasts; few fine threads of calcium carbonate; 30 percent calcium carbonate equivalent; few fragments of snail shells; violently effervescent; moderately alkaline; clear smooth boundary.

Bk1—29 to 52 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable; few very fine and fine roots; few wormcasts; 6 percent fine threads of calcium carbonate; 35 percent calcium carbonate equivalent; few fragments of snail shells; violently effervescent; moderately alkaline; gradual smooth boundary.

Bk2—52 to 80 inches; light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable; common very fine roots; few wormcasts; 5 percent fine threads of calcium carbonate; 35 percent calcium carbonate equivalent; violently effervescent; moderately alkaline.

The solum thickness is more than 80 inches. The percent of clay in the control section ranges from 18 to 32 percent, and the percent of fine sand or coarser ranges from 6 to 15 percent. The calcium carbonate equivalent ranges from 25 to 40 percent. It is moderately alkaline and calcareous throughout.

The A or Ap horizon, where present, has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The Bw horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. Texture is silt loam or silty clay loam.

The Bk horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is silt loam or silty clay loam. Concretions, threads, and masses of calcium carbonate ranges from 5 to 8 percent.

Monteola Series

The Monteola series (fig. 27) consists of very deep, very gently sloping and gently sloping, moderately well drained, very slowly permeable soils on uplands. These soil formed in clays and clays interbedded with shale. Slope ranges from 1 to 5 percent. Soils of the Monteola series are fine, smectitic, hyperthermic Typic Haplusterts.

Typical pedon of Monteola clay, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.2 miles south on Farm Road 108, 3.7 miles southwest on county road, and 225 feet west in pastureland. USGS New Davy topographic quadrangle; lat. 29 degrees 07 minutes 20 seconds N. and long. 97 degrees 37 minutes 40 seconds W.

Ap—0 to 6 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak fine subangular blocky structure; very hard, very firm; many fine, common medium, and few coarse roots; few pressure faces; few fragments of snail shells; slightly effervescent; moderately alkaline; clear wavy boundary.

A—6 to 14; inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure with wedge-shaped aggregates; very hard, very firm; few fine roots; few pressure faces; few fragments of snail shells; slightly effervescent; moderately alkaline; gradual wavy boundary.

Bss1—14 to 20; inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; very hard, very firm; few fine roots; few slickensides and pressure faces; few fragments of snail shells; slightly effervescent; moderately alkaline; gradual wavy boundary.

Bss2—20 to 41 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few fine roots; few vertical cracks filled with black clay; common grooved slickensides; few fragments of snail shells; few fine concretions of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

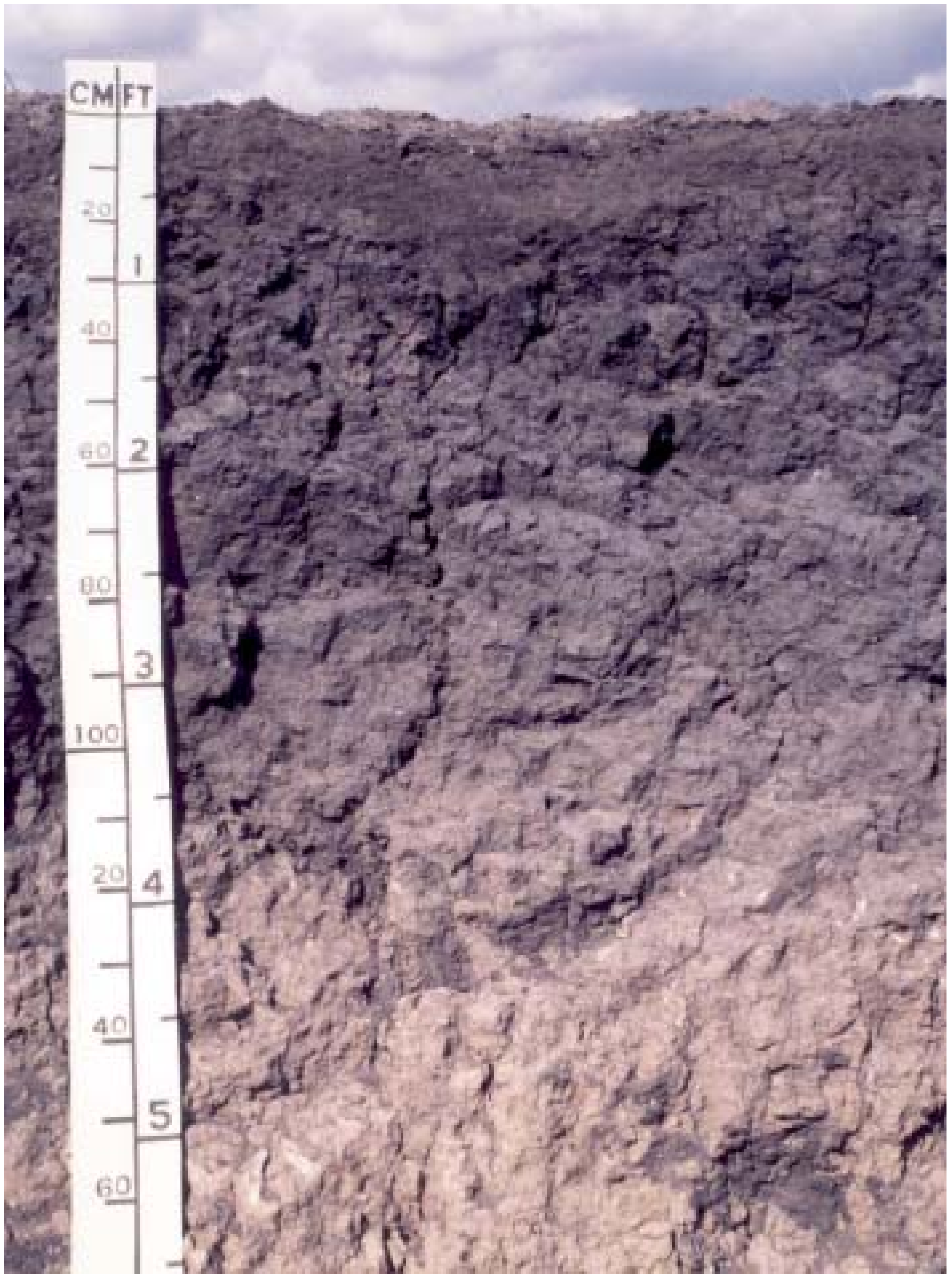

Figure 27.—A profile of Monteola clay, 1 to 3 percent slopes. Organic matter has stained the surface a dark color.

Bkss1—41 to 56 inches; grayish brown (10YR 5/2) clay, dark gray (10YR 4/1) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few fine roots; common vertical cracks filled with very dark gray clay; common slickensides; common fragments of snail shells; 4 percent fine concretions of calcium carbonate; few thin masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss2—56 to 70 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; weak medium and coarse angular blocky structure; extremely hard, extremely firm; common vertical dark gray streaks; common slickensides; 6 percent fine concretions and masses of calcium carbonate; violently effervescent; moderately alkaline; gradual wavy boundary.

BCky—70 to 80 inches; very pale brown (10YR 7/3) clay, pale brown (10YR 6/3) moist; weak coarse subangular blocky structure; extremely hard, extremely firm; few vertical dark gray streaks; 6 percent masses and fine and medium concretions of calcium carbonate; 4 percent crystals of gypsum; few fine prominent yellowish red (5YR 5/6) masses of iron within the matrix; strongly effervescent; moderately alkaline.

The solum thickness is more than 80 inches. The clay content of the control section ranges from 40 to 60 percent. When dry, cracks up to 2 inches wide extend from the surface to a depth greater than 20 inches. Slickensides range from few to common at a depth of 14 to more than 40 inches. Concretions and masses of calcium carbonate range from 0 to 6 percent. Calcium carbonate equivalent ranges from 5 to 20 percent. Siliceous pebbles range from none to few. Reaction ranges from slightly alkaline to strongly alkaline.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1.

The Bss horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2. Masses of iron in shades of yellow and brown range from none to few. Iron depletions in shades of gray range from none to few.

The Bkss horizons have hue of 10YR, value of 4 to 6, and chroma of 1 to 3.

The BCk horizon has hue of 10YR or 2.5Y, value of 6 to 8, and chroma of 2 to 4. Crystals of gypsum range from 2 to 6 percent.

Navasota Series

The Navasota series consists of very deep, nearly level, somewhat poorly drained, very slowly permeable soils on flood plains. These soils formed in clayey alluvium. Slope are 0 to 1 percent. Soils of the Navasota series are fine, smectitic, thermic Aeric Endoaquerts.

The Navasota soils in this survey area are taxadjuncts to the series because of the neutral to moderately alkaline reaction throughout the solum and very dark gray colors in the lower layers are outside the defined range for the series. This difference, however, does not significantly affect the use, management, or interpretations of the soils.

Typical pedon of Navasota clay, 0 to 1 percent slopes, frequently flooded; from the intersection of U.S. Highway 183 and U.S. Highway 90A in Gonzales, 9.8 miles north on U.S. Highway 183, 2.0 miles south on Farm Road 2091, 1.28 miles west on county road, and 250 feet southwest. USGS Ottine topographic quadrangle; lat. 29 degrees 36 minutes 07 seconds N. and long. 97 degrees 36 minutes 01 seconds W.

A—0 to 7 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; weak medium angular blocky structure; very hard, very firm; many very fine and fine roots; few pressure faces; few fine concretions of iron-manganese; few fragments of snail shells; common fine prominent brown (7.5YR 4/4) masses of iron in ped interiors; few medium faint dark gray (10YR 4/1) iron depletions along root channels; neutral; abrupt wavy boundary.

Bg—7 to 12 inches; gray (10YR 6/1) clay, gray (10YR 5/1) moist; moderate medium angular blocky structure; very hard, very firm; common very fine and few fine roots; few medium pressure faces; few fragments of snail shells; few fine distinct dark brown (10YR 3/3) threads of iron accumulation along root channels; few medium prominent greenish gray (5BG 5/1) iron depletions along roots channels; neutral; gradual wavy boundary.

Bssg1—12 to 25 inches; gray (10YR 5/1) clay, dark gray (10YR 4/1) moist; moderate medium angular blocky structure; extremely hard, very firm; few very fine and fine roots; common medium slickensides; few fragments of snail shells; few fine distinct yellowish brown (10YR 5/4) masses of iron in ped interiors; few fine prominent greenish gray (5BG 5/1) iron depletions along roots channels; moderately alkaline; gradual wavy boundary.

2Bssg1—25 to 55 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium and coarse angular blocky structure; very hard, very firm; few fine roots; common medium slickensides; common pressure faces; few fragments of snail shells; moderately alkaline; gradual wavy boundary.

2Bssg2—55 to 80 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate coarse angular blocky structure; very hard, firm; few very fine roots; common fine slickensides; few fine prominent yellowish brown (10YR 5/4) masses of iron along root channels; moderately alkaline.

The solum thickness is more than 80 inches. The control section has clay content that ranges from 40 to 60 percent. Concretions and masses of iron-manganese range from none to common in the A horizon and few to common below. Cracks, 1 to 3 inches wide, that extend from the surface to a depth of more than 20 inches remain open for less than 90 cumulative days in most years. Slickensides begin at a depth of 10 to 24 inches and extend throughout the solum. The soil is saturated in one or more subhorizons within 20 inches of the surfaces for extended periods during most years. Fragments of snail shells range from none to few.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from few to common. Iron depletions in shades of gray range from few to common. Reaction ranges from moderately acid to slightly alkaline.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from few to common. Iron depletions in shades of gray range from few to common. Reaction ranges from slightly acid to moderately alkaline.

The Bssg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from few to common. Iron depletions in shades of gray range from few to common. Concretions of calcium carbonate range from none to few. Crystals of gypsum range from none to common in the lower part. Reaction ranges from neutral to moderately alkaline.

The 2Bssg horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. Masses of iron in shades of yellow or brown range from none to few. Iron depletions in shades of gray range from none to few. Reaction ranges from neutral to moderately alkaline.

Normangee Series

The Normangee series consists of soils that are deep to weathered shale. They are very gently sloping to moderately sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in shale. Slope ranges from 1 to 8 percent. Soils of the Normangee series are fine, smectitic, thermic Udertic Haplustalfs.

Typical pedon of Normangee sandy clay loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 90A and Farm Road 794 in Gonzales, 2.2 miles north on Farm Road 794, and 50 feet west in pastureland. USGS Gonzales North topographic quadrangle; lat. 29 degrees 34 minutes 19 seconds and long. 97 degrees 27 minutes 53 seconds W.

A—0 to 6 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; hard, firm; many very fine and fine roots; neutral; clear smooth boundary.

Bt—6 to 14 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure that forms wedge-shaped aggregates; very hard, very firm; common fine and medium roots; few clay films on faces of peds; few fine distinct yellowish red (5YR 5/6) masses of iron in ped interiors; moderately alkaline; clear smooth boundary.

Btss1—14 to 18 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; moderate fine and medium angular blocky structure; very hard, very firm; common very fine roots; few vertical cracks ½ inch wide; few slickensides and pressure faces; few clay films on faces of peds; few fine concretions of iron-manganese; common fine distinct yellowish red (5YR 5/8) masses of iron in ped interiors; few pebbles; moderately alkaline; gradual smooth boundary.

Btss2—18 to 32 inches; brownish yellow (10YR 6/6) clay, yellowish brown (10YR 5/6) moist; weak medium angular blocky structure; extremely hard, extremely firm; common very fine roots; few cracks ¼ inch wide; few slickensides and pressure faces; few clay films on faces of peds; common fine concretions of iron-manganese; few fragments of ironstone; moderately alkaline; gradual smooth boundary.

Btk—32 to 53 inches; brownish yellow (10YR 6/8) clay, yellowish brown (10YR 5/8) moist; weak fine and medium angular blocky structure; extremely hard, extremely firm; common very fine roots; few clay films on faces of peds; few fine concretions of iron-manganese; common fine concretions of calcium carbonate; 5 percent fine and medium masses of calcium carbonate; few fine distinct strong brown (7.5YR 4/6) masses of iron in ped interiors; few pebbles of ironstone; strongly effervescent; moderately alkaline; gradual smooth boundary.

Ck—53 to 80 inches; yellowish brown (10YR 5/6) shale that has clay texture; dark yellowish brown (10YR 4/6) moist; massive; very hard, very firm; common very fine roots; 5 percent fine concretions of calcium carbonate; 4 percent fine and medium masses of calcium carbonate; few fragments of ironstone; strongly effervescent; moderately alkaline.

The solum thickness ranges from 40 to 60 inches. Depth to secondary carbonates range from 30 to 36 inches. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches. The clay content in the control section ranges from 40 to 50 percent. Slickensides and pressure faces occur in the upper 30 inches of the subsoil.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. Siliceous pebbles range from none to few. Reaction is moderately acid to neutral.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction ranges from moderately acid to moderately alkaline.

The Btss horizon has hue of 10YR or 2.5Y, value of 4 or 6, and chroma of 3 to 8. Texture is clay or clay loam. Masses of iron in shades of yellow or brown range from none to few. Concretions or masses of calcium carbonate and crystals of gypsum range from few to common. Reaction ranges from moderately acid to moderately alkaline. Some pedons have BC or BCy horizons with similar colors and textures.

The Ck horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. It is shale with clay loam or clay texture. Concretions or masses of calcium carbonate and crystals of gypsum range from few to common. Reaction ranges from neutral to moderately alkaline.

Nusil Series

The Nusil series consists of very deep, nearly level to gently sloping, well drained, slowly permeable sandy soils on stream terraces. These soils formed in loamy sediments overlain by eolian sands. Slope ranges from 0 to 5 percent. Soils of the Nusil series are loamy, siliceous, active, hyperthermic Arenic Paleustalfs.

Typical pedon of Nusil loamy fine sand, 0 to 5 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 11.4 miles south on Farm Road 108 to intersection with county road, 1.5 miles east on county road, and 300 feet south in pastureland. USGS Sample topographic quadrangle; lat. 29 degrees 09 minutes 0.0 seconds N. and long. 97 degrees 34 minutes 0.0 seconds W.

A—0 to 24 inches; grayish brown (10YR 5/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; single grain; soft, very friable; many fine and few medium roots; neutral; clear smooth boundary.

E—24 to 35 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; single grain; soft, very friable; few fine and medium roots; neutral; abrupt smooth boundary.

Bt1—35 to 49 inches; grayish brown (10YR 5/2) sandy clay loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium subangular blocky structure; hard, firm; few fine roots; many clay films on faces of peds; common medium and coarse prominent dark red (2.5YR 3/6) and common fine and medium distinct brownish yellow (10YR 6/6) masses of iron on faces of peds; slightly acid; clear smooth boundary.

Bt2—49 to 57 inches; light brownish gray (10YR 6/2) sandy clay loam, grayish brown (10YR 5/2) moist; moderate medium angular blocky structure; hard, firm; many clay films on faces of peds; common medium prominent dark red (2.5YR 3/6) and common medium distinct brownish yellow (10YR 6/6) masses of iron on faces of peds; few siliceous pebbles; slightly acid; gradual smooth boundary.

Bt3—57 to 70 inches; light brownish gray (10YR 6/2) sandy clay loam, light brownish gray (10YR 6/2) moist; moderate medium angular blocky structure; hard, firm; common clay films on faces of peds; common medium and coarse prominent red (2.5YR 5/8) and common fine and medium distinct brownish yellow (10YR 6/6) masses of iron on faces of peds; few masses of calcium carbonate; few siliceous pebbles; neutral; gradual smooth boundary.

BCt—70 to 80 inches; light gray (10YR 7/2) sandy clay loam, light brownish gray (10YR 6/2) moist; weak medium and coarse subangular blocky structure; hard, firm; few clay films; common medium and coarse prominent dark red (2.5YR 3/6), few fine distinct brownish yellow (10YR 6/6) and few medium prominent red (2.5YR 5/8) masses of iron on faces of peds; few siliceous pebbles; neutral.

The solum thickness is more than 80 inches. The content of clay in the control section ranges from 18 to 35 percent

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The E horizon is 1 or 2 units of value higher in color than the A horizon. Some pedons have up to 2 percent siliceous pebbles. Reaction ranges from slightly acid to slightly alkaline.

The Bt horizons have hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 2 to 6. Masses and accumulations of iron in shades of red, yellow, or brown range from few to common. Some pedons have few iron depletions in various shades of gray. Reaction ranges from slightly acid to moderately alkaline.

The BCt horizon has hue of 10YR, value of 6 or 7, and chroma of 2 to 4. Texture is fine sandy loam or sandy clay loam. Masses of iron in shades of yellow or brown range from few to common. Reaction ranges from slightly acid to moderately alkaline.

Padina Series

The Padina series consists of very deep, nearly level to gently sloping, well drained, moderately permeable soils on uplands and high terraces. These soils formed in thick sandy materials. Slope ranges from 0 to 5 percent. Soils of the Padina series are loamy, siliceous, active, thermic Grossarenic Paleustalfs.

Typical pedon of Padina loamy fine sand, 0 to 5 percent slopes; from the intersection of Farm Road 1296 and Farm Road 1115 in Waelder, 1.3 miles north on Farm Road 1296, 0.9 miles northwest on county road, 0.5 miles north on gravel road, and 350 feet north in pasture. USGS Jeddo topographic quadrangle; lat. 29 degrees 45 minutes 27 seconds N. and long. 97 degrees 19 minutes 54 seconds W.

A—0 to 15 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 5/3) moist; single grain; loose; many fine and medium roots; common fine pores; neutral; clear smooth boundary.

E—15 to 49 inches; very pale brown (10YR 8/3) loamy fine sand, very pale brown (10YR 7/3) moist; single grain; loose; few fine and medium roots; neutral; clear smooth boundary.

Bt1—49 to 59 inches; brownish yellow (10YR 6/6) sandy clay loam, yellowish brown (10YR 5/6) moist; weak fine and medium subangular blocky structure; hard, friable; few fine roots; few streaks of pale brown (10YR 6/3) sand; few thin clay films on faces of peds; common medium prominent red (2.5YR 4/8) and few fine prominent yellowish red (5YR 4/6) masses of iron in ped interiors; slightly acid; gradual smooth boundary.

Bt2—59 to 80 inches; very pale brown (10YR 8/2) sandy clay loam, light gray (10YR 7/2) moist; weak coarse subangular blocky structure; hard, friable; few fine and medium roots; few thin clay films on faces of peds; many medium prominent red (2.5YR 4/6), and few medium distinct brownish yellow (10YR 6/6) masses of iron in ped interiors; common coarse faint light brownish gray (10YR 6/2) iron depletions on faces of peds; slightly acid.

The solum thickness ranges from 65 to more than 80 inches. The clay content in the control section ranges from 18 to 35 percent.

The A horizon has a hue of 10YR, value of 4 to 6, and chroma of 2 to 4. The E horizon is 1 to 2 units of value higher than the A horizon. The combined thickness of the A and E horizons are 40 to 78 inches. Reaction ranges from moderately acid to neutral.

The Bt horizon has a hue of 10YR, value of 5 to 8, and chroma of 2 to 8. Texture is sandy clay loam or fine sandy loam with 18 to 35 percent clay. Masses of iron in shades of red, yellow, or brown range from few to many. Iron depletions in shades of gray range from few to many. Reaction ranges from strongly acid to slightly acid.

Papalote Series

The Papalote series consists of very deep, nearly level and very gently sloping, moderately well drained, slowly permeable soils on uplands. These soils formed in loamy and clayey marine sediments. Slope ranges from 0 to 3 percent. Soils of the Papalote series are fine, smectitic, hyperthermic Typic Paleustalfs.

Typical pedon of Papalote loamy fine sand, 0 to 1 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 10.0 miles south on Farm Road 108, and 50 feet east in rangeland. USGS Sample topographic quadrangle; lat. 29 degrees 08 minutes 40 seconds N. and the long. 97 degrees 35 minutes 37 seconds W.

A—0 to 14 inches; grayish brown (10YR 5/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose, very friable; many fine and few medium roots; few siliceous pebbles; neutral; abrupt smooth boundary.

Bt1—14 to 26 inches; grayish brown (10YR 5/2) sandy clay, dark grayish brown (10YR 4/2) moist; moderate fine and medium prismatic structure parting to moderate medium angular blocky; very hard; extremely firm; few fine roots;

many thick clay films on faces of peds; dark grayish brown sand grains coating vertical ped surfaces; common fine and medium prominent red (2.5YR 4/6), yellow (2.5Y 7/6), and few fine distinct brownish yellow (10YR 6/6) masses of iron on faces of peds; neutral; gradual smooth boundary.

Bt2—26 to 39 inches; light brown (7.5YR 6/4) sandy clay, brown (7.5YR 5/4) moist; moderate medium prismatic structure parting to moderate medium and coarse angular blocky; very hard, very firm; few fine roots; few clay films on faces of peds; common fine and medium prominent yellowish red (5YR 5/6) and few fine prominent yellow (2.5Y 7/6) masses of iron on faces of peds; few fine prominent dark gray iron depletions along root channels; slightly alkaline; gradual smooth boundary.

Btk—39 to 52 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium and coarse angular blocky structure; hard, firm; common thin clay films on surfaces of peds; few fine and medium prominent yellowish red (5YR 5/6) and few fine distinct brownish yellow (10YR 6/6) masses of iron on faces of peds; 4 percent fine and medium masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual smooth boundary.

BCt—52 to 80 inches; very pale brown (10YR 7/4) sandy clay loam, light yellowish brown (10YR 6/4) moist; few fine faint yellowish brown (10YR 5/4) masses of iron on faces of peds; common clay films on faces of peds; few fine masses of calcium carbonate; slightly alkaline.

The solum thickness is more than 80 inches. Depth to visible secondary carbonates range from 30 to 40 inches. The clay content in the control section ranges from 35 to 55 percent. Redoximorphic features in the upper Bt horizons are due to present day wetness. Redoximorphic features in the lower Bt are considered inherited from parent material or are relict.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Reaction is moderately acid to slightly alkaline.

The Bt horizons have hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 4. Texture in the upper part of the Bt horizon is clay loam, sandy clay, or clay. Texture in the lower part is sandy clay loam, clay loam, or sandy clay. Masses of iron in shades of red, yellow, or brown range from none to common. Iron depletions in various shades of gray range from none to common. Reaction is slightly acid to moderately alkaline.

The Btk horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. Texture is sandy clay loam or sandy clay. Masses of iron in shades of red, yellow, or brown range from few to common. Masses of calcium carbonate range from 0 to 5 percent. Reaction is neutral to moderately alkaline.

The BCt horizon has hue of 10YR, value of 6 to 8, and chroma of 3 or 4. Masses of iron in shades of yellow or brown range from none to few. Masses of calcium carbonate range from 0 to 5 percent. Reaction is neutral to moderately alkaline.

Some pedons have a C horizon with hue of 10YR, value of 7 or 8, and chroma of 3 or 4. Texture is sandy clay loam. Reaction is neutral to moderately alkaline.

Pavelek Series

The Pavelek series (fig. 28) consists of soils that are shallow to a petrocalcic horizon. These nearly level to gently sloping, well drained, slowly permeable soils occur on uplands. They formed in clayey materials over noncalcareous siltstone interbedded with layers of soft calcium carbonate. Slope ranges from 0 to 5 percent. Soils of the Pavelek series are clayey, smectitic, hyperthermic shallow Petrocalcic Calciustolls.

Figure 28.—A profile of Pavelek clay, 0 to 3 percent slopes. The petrocalcic horizon occurs at a depth of 17 inches. Fragments occur in the horizon above the petrocalcic layer.

Typical pedon of Pavelek clay, 0 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.1 miles south on Farm Road 108 to the intersection with County Road 219, 1.0 mile southwest on County Road 219 to the intersection with County Road 212, 0.7 mile west on County Road 212, and 200 feet north in rangeland. USGS Sample topographic quadrangle; lat. 29 degrees 09 minutes 53 seconds N. and long. 97 degrees 37 minutes 23 seconds W.

A—0 to 11 inches; very dark gray (10YR 3/1) clay, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure; very hard, very firm; many fine, common medium, and few coarse roots; 5 percent fine concretions of calcium carbonate; 5 percent calcium carbonate equivalent; slightly effervescent; moderately alkaline; clear smooth boundary.

Bk—11 to 17 inches; dark gray (10YR 4/1) gravelly clay loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure; very hard, very firm; common fine and medium, and few coarse roots; 30 percent concretions of calcium carbonate and plate like fragments of weakly cemented calcium carbonate 1 to 3 inches in length and ¼ to ½ inch thick; strongly effervescent; moderately alkaline; abrupt smooth boundary.

Bkm—17 to 25 inches; very pale brown (10YR 8/2) strongly cemented caliche, white (10YR 8/1) moist; massive; extremely hard, extremely firm; common fine and few medium roots matted on top of laminar cap, few coarse roots with very dark gray (10YR 3/1) clay in fracture; laminar cap is ½ to 1 inch in thickness and can be broken with a sharpshooter; violently effervescent; moderately alkaline; clear smooth boundary.

2Cr—25 to 80 inches; very pale brown (10YR 7/3) noncalcareous weakly cemented siltstone of silt loam texture, light gray (2.5Y 7/2) moist; massive; few thin layers ⅛ to ¼ inch wide of calcium carbonate in the upper part of the horizon; matrix is noncalcareous; moderately alkaline.

The solum thickness ranges from 10 to 20 inches to the petrocalcic horizon. The clay content in the control section ranges from 35 to 55 percent.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Concretions of calcium carbonate range from 0 to 5 percent. Calcium carbonate equivalent ranges from 5 to 10 percent.

The Bk horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is gravelly clay loam or gravelly clay. Fragments of petrocalcic material range from 15 to 30 percent. Calcium carbonate equivalent ranges from 20 to 25 percent.

The Bkm horizon has hue of 10YR or 2.5Y, value of 7 or 8, and chroma of 1 or 2. It is indurated or strongly cemented caliche of loam texture. Calcium carbonate equivalent ranges from 40 to 50 percent.

The 2Cr horizon has hue of 10YR or 2.5Y, value of 7 or 8, and chroma of 2 to 4. It is weakly cemented siltstone with texture of loam or silt loam. In the upper part, thin films and layers of calcium carbonate range from 1 to 10 percent. Calcium carbonate equivalent ranges from 20 to 50 percent in the upper part. Siltstone fragments slake in water.

Rhymes Series

The Rhymes series consists of very deep, nearly level to gently sloping, somewhat excessively drained, moderately slow permeable soils on stream terraces. These soils formed in loamy sediments overlain by eolian sands. Slope ranges from 0 to 5 percent. Soils of the Rhymes series are sandy, siliceous, active, hyperthermic Grossarenic Paleustalfs.

Typical pedon of Rhymes fine sand, 0 to 5 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 3.2 miles east on U.S. Highway 87 to ranch road, 1.0 mile north on ranch road, and 0.2 mile east in rangeland. USGS Pilgrim topographic quadrangle; lat. 29 degrees 16 minutes 15 seconds N. and long. 97 degrees 34 minutes 50 seconds W.

A—0 to 25 inches; light yellowish brown (10YR 6/4) fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, very friable; many very fine and few fine roots; few siliceous pebbles; slightly acid; clear smooth boundary.

E—25 to 48 inches; very pale brown (10YR 8/4) fine sand, very pale brown (10YR 7/3) moist; single grain; loose, very friable; few very fine and fine roots; moderately acid; abrupt smooth boundary.

Bt1—48 to 60 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; hard, firm; few fine roots; common thin clay films on faces of peds; common fine and medium prominent red (10R 4/8), common fine distinct strong brown (7.5YR 5/6) and common fine distinct brownish yellow (10YR 6/6) masses of iron on faces of peds; moderately acid; gradual smooth boundary.

Bt2—60 to 69 inches; light yellowish brown (10YR 6/4) sandy clay loam, light yellowish brown (10YR 6/4) moist; moderate medium subangular blocky structure; hard, firm; common thin clay films on faces of peds; many medium and coarse prominent red (10R 4/8) and few fine distinct yellow (10YR 7/8) masses of iron on faces of peds; moderately acid; gradual smooth boundary.

Bt3—69 to 80 inches; light gray (10YR 7/2) sandy clay loam, light gray (10YR 7/2) moist; moderate medium angular blocky structure; hard, firm; common thin clay films on faces of peds; many medium and coarse prominent red (10R 4/8) and few fine prominent brownish yellow (10YR 6/8) masses of iron on faces of peds; moderately acid.

The solum thickness is more than 80 inches. The clay content in the control section ranges from 18 to 35 percent.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 or 4. The E horizon is 1 or 2 units of value higher in color than the A horizon. Reaction ranges from moderately acid to slightly alkaline.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. Texture is fine sandy loam or sandy clay loam. Masses of iron in shades of red, yellow, or brown range from few to common. Iron depletions in shades of gray range from few to common. Reaction ranges from moderately acid to slightly alkaline.

Rosanky Series

The Rosanky series consists of very deep, very gently sloping to gently sloping, well drained, moderately slowly permeable soils on uplands. These soils formed in weakly cemented sandstone. Slope ranges from 1 to 5 percent. Soils of the Rosanky series are fine, mixed, semiactive, thermic Ultic Paleustalfs.

Typical pedon of Rosanky fine sandy loam, 1 to 3 percent slopes; from the intersection of Farm Road 1296 and Farm Road 1115 in Waelder, 5.3 miles northwest on Farm Road 1296, and 50 feet east in rangeland. USGS Jeddo topographic quadrangle; lat. 29 degrees 46 minutes 55 seconds N. and long. 97 degrees 19 minutes 06 seconds W.

A—0 to 8 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, friable; many fine and medium roots, few coarse roots; few fine ironstone pebbles; strongly acid; clear smooth boundary.

E—8 to 12 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; hard, friable; common fine and medium roots; few fine pebbles; strongly acid; abrupt smooth boundary.

Bt1—12 to 27 inches; red (2.5YR 4/6) clay, dark red (2.5YR 3/6) moist; moderate medium subangular blocky structure; very hard, very firm; few fine and medium roots; thin clay films on faces of peds; few fine ironstone pebbles; strongly acid; gradual smooth boundary.

Bt2—27 to 37 inches; red (2.5YR 5/6) clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; very hard, very firm; few fine roots; few thin seams of very pale brown (10YR 7/3) loamy material; few thin clay films on faces of peds; few medium prominent yellowish brown (10YR 5/8) mottles in ped interiors; strongly acid; gradual smooth boundary.

Bt3—37 to 51 inches; red (2.5YR 5/8) clay loam, red (2.5YR 4/8) moist; moderate fine angular blocky structure; very hard, very firm; few fine roots; few thin seams of very pale brown (10YR 7/3) loamy materials; few thin clay films on faces of peds; few medium prominent yellowish brown (10YR 5/8) mottles in ped interiors; strongly acid; gradual smooth boundary.

BCt—51 to 57 inches; reddish yellow (5YR 6/6) clay loam, yellowish red (5YR 5/6) moist; moderate fine subangular blocky structure; hard, firm; few fine roots; common seams of very pale brown (10YR 7/3) sand; few thin clay films on faces of peds; many prominent distinct pale brown (10YR 6/3) and common medium distinct yellowish brown (10YR 5/6) mottles in ped interiors; moderately acid; gradual wavy boundary.

C—57 to 70 inches; yellow (10YR 7/6) sandy clay loam; brownish yellow (10YR 6/6) moist; massive; very hard, friable; few fragments of sandstone; few fine distinct gray (10YR 6/1) iron depletions along pores; few fine prominent reddish yellow (5YR 6/6) and few faint yellowish brown (10YR 5/6) mottles within the matrix; moderately acid; clear wavy boundary.

Cr—70 to 80 inches; light brownish gray (10YR 6/2) weakly cemented sandstone with fine sandy loam texture; massive; very hard, very firm; common fine prominent reddish yellow (5YR 6/6) and common medium distinct yellowish brown (10YR 5/6) mottles in the matrix; moderately acid.

The solum thickness ranges from 40 to 60 inches. Depth to a paralithic contact of sandstone ranges from 60 to 80 inches. The clay content in the control section ranges from 35 to 50 percent. The base saturation ranges from 35 to 75 percent. Ironstone and sandstone pebbles range from 0 to 2 percent throughout the argillic horizon.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. The E horizon has values 1 or 2 units greater than the A horizon. Ironstone and sandstone pebbles range from 0 to 10 percent. Reaction ranges from strongly acid to slightly acid.

The Bt horizon has hue of 2.5YR or 5YR, with value of 4 to 6, and chroma of 6 to 8. Texture is sandy clay or clay. Mottles in shades of red, yellow, or brown range from none to few. Reaction is strongly acid or moderately acid.

The BCt and C horizons have hue of 2.5YR to 10YR, value of 5 to 7, and chroma of 6 to 8. Texture is fine sandy loam, sandy clay loam, or clay loam. Mottles in shades of red, yellow, brown, or gray range from none to a mottled matrix. Reaction is strongly acid or moderately acid.

The Cr horizon is weakly or strongly cemented sandstone. Colors are in shades of red, brown, or gray. It is weakly cemented sandstone with a texture of fine sandy loam or sandy clay loam, and is very hard when dry.

Rosenbrock Series

The Rosenbrock series consists of soils that are deep to siltstone. They are very gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in clayey materials over thick beds of weakly cemented tuffaceous siltstone. Slope ranges from 1 to 3 percent. Soils of the Rosenbrock series are fine, smectitic, hyperthermic Typic Haplusterts.

Typical pedon of Rosenbrock clay, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.1 miles south on Farm Road 108, 1.2 miles southwest on county road, and 1,500 feet west in pastureland. USGS Sample topographic quadrangle; lat. 29 degree 09 minutes 12 seconds N. and long. 97 degrees 37 minutes 25 seconds W.

A—0 to 8 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; very hard, very firm; many fine and few medium roots; few wormcasts; common cracks ½ to 1½ inches wide; strongly effervescent; moderately alkaline; clear smooth boundary.

Bw—8 to 28 inches; very dark gray (10YR 3/1) clay, dark grayish brown (10YR 4/2) dry; moderate medium angular blocky structure that forms wedge-shaped aggregates; extremely hard; extremely firm; common fine and few medium roots; few vertical cracks ¼ to ¾ inch wide filled with black clay; common pressure faces; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss1—28 to 40 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few fine roots; few vertical cracks filled with very dark gray (10YR 3/1) clay; common pressure faces and slickensides; 6 percent concretions and thin films of calcium carbonate; few fragments of snail shells; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bkss2—40 to 59 inches; pale brown (10YR 6/3) clay, brown (10YR 5/3) moist; weak medium subangular blocky structure; extremely hard, extremely firm; few vertical cracks filled with dark grayish brown (10YR 4/2) clay; few pressure faces; common distinct slickensides; 8 percent masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cr—59 to 80 inches; very pale brown (10YR 8/2) weakly cemented tuffaceous siltstone with silt loam texture, light gray (10YR 7/2) moist; massive; hard, firm, few masses and concretions of calcium carbonate in upper part; few siltstone fragments do not slake in water after 24 hours; moderately alkaline.

The solum thickness ranges from 40 to 60 inches. The clay content of the control section ranges from 45 to 60 percent. When dry, cracks up to 2 inches in width extend from the surface to more than 20 inches in depth. Pressure faces and slickensides begin at a depth of 8 inches and extend to more than 40 inches. Reaction is slightly alkaline or moderately alkaline.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Concretions of calcium carbonate range from none to few.

The Bw horizon has hue of 10YR, value of 3 to 5, and chroma of 1. Concretions of calcium carbonate range from none to few.

The Bk horizon has hue of 10YR, value of 4 to 7, and chroma of 2 to 4. Masses and concretions of calcium carbonate range from 5 to 10 percent.

Some pedons have a BCk horizon with hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. Texture is clay or silty clay. Masses and concretions of calcium carbonate range from 5 to 15 percent.

The 2Cr horizon has hue of 10YR, value of 7 or 8, and chroma of 2 to 4. It is weakly cemented tuffaceous siltstone with texture of loam, or silt loam, interbedded with thin layers of calcium carbonate.

Rutersville Series

The Rutersville series (fig. 29) consists of deep, nearly level and very gently sloping, moderately well drained, slowly permeable soils on uplands. These soils formed in material weathered from tuffaceous sandstone. Slope ranges from 0 to 2 percent. Soils of the Rutersville series are fine-loamy, mixed, active, thermic Aquic Paleustalfs.

Typical pedon of Rutersville loamy fine sand, 0 to 1 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 1.1 mile south on Farm Road 108, 0.2 miles southwest on county road, and 80 feet southeast in rangeland. USGS Smiley topographic quadrangle; lat. 29 degrees 14 minutes 00 seconds N. and long. 97 degrees 38 minutes 12 seconds W.

A—0 to 12 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; single grain; soft, loose; common fine and few medium roots; many fine pores; few siliceous pebbles; neutral; abrupt smooth boundary.

Figure 29.—A profile of Rutersville loamy fine sand, 0 to 1 percent slopes. The abrupt textural change occurs at a depth of 12 inches.

Bt1—12 to 20 inches; grayish brown (10YR 5/2) sandy clay loam, dark grayish brown (10YR 4/2) moist; weak fine prismatic structure parting to moderate fine and medium angular blocky; hard, firm; few fine roots; few fine pores; common thin clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) and few fine distinct yellow (10YR 7/8) masses of iron on faces of peds; few siliceous pebbles; slightly acid; gradual smooth boundary.

Bt2—20 to 30 inches; brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak fine and medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm; few fine roots; few fine pores; common thin clay films on faces of peds; common fine faint yellowish brown (10YR 5/6) masses of iron on faces of peds; few fine faint grayish brown (10YR 5/2) iron depletions in ped interiors; few siliceous pebbles; slightly acid; gradual smooth boundary.

Bt3—30 to 46 inches; very pale brown (10YR 7/3) sandy clay loam, pale brown (10YR 6/3) moist; weak medium prismatic structure parting to weak medium angular blocky; hard, firm; common thin clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron on surfaces of peds; few siliceous pebbles; slightly acid; gradual smooth boundary.

BC—46 to 58 inches; very pale brown (10YR 7/3) fine sandy loam, very pale brown (10YR 7/3) moist; weak medium angular blocky structure; hard, firm; few clay films on surfaces of peds; few fine distinct yellowish brown (10YR

5/6) masses of iron on faces of peds; few siliceous pebbles; neutral; clear smooth boundary.

Cr—58 to 80 inches; pale yellow (2.5Y 8/4), weakly cemented sandstone of fine sandy loam texture, light gray (2.5Y 7/2) moist; massive; neutral.

The solum thickness and depth to weathered bedrock ranges from 40 to 60 inches. The clay content in the upper 20 inches of the Bt horizon is 27 to 45 percent.

The A horizon and, where present, the E horizon have hue of 10YR, value of 4 to 6, and chroma of 2 or 3. Siliceous pebbles range from none to few. Reaction is very strongly acid to neutral.

The Bt horizon has hue of 10YR, value of 4 to 7, and chroma of 2 to 3. Texture is sandy clay loam, clay loam, or sandy clay. Masses of iron in shades of red, yellow, or brown range from few to common. Iron depletions in shades of gray ranges from few to common. Siliceous pebbles ranges from none to few. Reaction is very strongly acid to slightly acid.

The BC or BCt horizon has hue of 10YR, value of 4 to 7, and chroma of 2 or 3. Texture is fine sandy loam or sandy clay loam. Masses of iron in shades of red, yellow, and brown range from few to common. Iron depletions in shades of gray range from few to common. Concretions of calcium carbonate and salt crystals range from none to few. Siliceous pebbles range from none to few. Reaction is moderately acid to slightly alkaline.

The Cr horizon is weakly to strongly cemented sandstone in shades of yellow, brown, and olive that has fine sandy loam texture. Some pedons contain thin lenses and pockets of tuffaceous shale. A few concretions of calcium carbonate and white salts are present in some pedons.

Sarnosa Series

The Sarnosa series consists of very deep, moderately sloping, well drained, moderately permeable soils on uplands. These soils formed in calcareous sandstone and loamy soil materials. Slope ranges from 5 to 8 percent. Soils of the Sarnosa series are coarse-loamy, mixed, superactive, hyperthermic Typic Calciustolls.

Typical pedon of Sarnosa fine sandy loam, 5 to 8 percent slopes; from the intersection of U.S. Highway 183 and Farm Road 2067, 9.0 miles south on Farm Road 2067, 0.5 mile west on DeWitt County Road to entrance to ranch road, and 0.4 mile north in rangeland. USGS Westhoff topographic quadrangle; lat. 29 degrees 15 minutes 20 seconds N. and. long. 97 degrees 25 minutes 0.0 seconds W.

A—0 to 10 inches; dark grayish brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable; common very fine roots; 20 percent calcium carbonate equivalent; few fragments of snail shells; violently effervescent; moderately alkaline; clear smooth boundary.

Bw—10 to 19 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, firm; common very fine roots; 30 percent calcium carbonate equivalent; few fine concretions of calcium carbonate; few calcareous sandstone gravel; few fragments of snail shells; violently effervescent; moderately alkaline; gradual smooth boundary.

Bk1—19 to 29 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable; 30 percent calcium carbonate equivalent; 5 percent fine and medium concretions and masses of calcium carbonate; violently effervescent; moderately alkaline; gradual smooth boundary.

Bk2—29 to 46 inches; very pale brown (10YR 8/4) fine sandy loam, very pale brown (10YR 7/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable; 30 percent calcium carbonate equivalent; 15 percent fine and medium masses of calcium carbonate; violently effervescent; moderately alkaline; clear smooth boundary.

BCk—46 to 63 inches; very pale brown (10YR 8/4) fine sandy loam, very pale brown (10YR 7/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable; 15 percent fine and medium masses of calcium carbonate; 30 percent calcium carbonate equivalent; violently effervescent; moderately alkaline; clear smooth boundary.

C—63 to 80 inches; very pale brown (10YR 8/4) weakly cemented calcareous sandstone of fine sandy loam texture, very pale brown (10YR 8/4) moist; massive; very hard, very firm; 40 percent calcium carbonate equivalent; violently effervescent; moderately alkaline.

The solum thickness is 60 to more than 80 inches. The clay content in the 10- to 40-inch control section ranges from 8 to 15 percent. Reaction is moderately alkaline. Calcium carbonate equivalent ranges from 10 to 40 percent.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3. Texture is fine sandy loam, sandy clay loam, or loam.

The Bk horizons have hue of 7.5YR or 10YR, value of 5 to 8, and chroma of 2 to 4. Texture is fine sandy loam, loam, or sandy clay loam. Concretions, threads, and masses of calcium carbonate range from 5 to 15 percent.

The BCk horizon has hue of 10YR, value of 7 or 8, and chroma of 3 or 4. Texture is fine sandy loam, loam, or sandy clay loam. Concretions, masses, and threads of calcium carbonate range from 5 to 15 percent.

The C horizon has hue of 10YR, value of 8, and chroma of 3 or 4. It is weakly cemented sandstone of fine sandy loam, sandy clay loam, or loam texture.

Schattel Series

The Schattel series consists of soils that are deep to weathered shale. They are very gently sloping to gently sloping, well drained, slowly permeable soils on uplands. These soils formed in clayey residuum. Slope ranges from 2 to 5 percent. Soils of the Schattel series are fine, smectitic, hyperthermic Vertic Calciustepts.

Typical pedon of Schattel clay loam, 2 to 5 percent slopes, nonsaline; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.1 miles south on Farm Road 108, 1.9 miles southwest on county road, 1.8 miles southeast, and 300 feet west in pastureland. USGS Sample topographic quadrangle; lat. 29 degrees 07 minutes 58 seconds N and long. 97 degrees 35 minutes 53 seconds W.

A—0 to 6 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; hard, firm; common fine, medium, and few coarse roots; common cracks ½ to 1 inch wide; few wormcasts; few fine concretions of calcium carbonate; few fragments of snail shells; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bw—6 to 25 inches; pale brown (10YR 6/3) clay, brown (10YR 5/3) moist; moderate medium subangular blocky structure that forms wedge-shaped aggregates; extremely hard, extremely firm; few fine roots; common pressure faces; few vertical cracks filled with dark grayish brown (10YR 4/2) sandy clay loam; few fine concretions and masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bk—25 to 39 inches; very pale brown (10YR 7/3) clay, pale brown (10YR 6/3) moist; moderate medium subangular blocky structure; extremely hard, extremely firm; common pressure faces; few vertical dark grayish brown streaks; 10 percent fine and medium concretions and masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

BCk—39 to 52 inches; very pale brown (10YR 7/4) clay, very pale brown (10YR 7/4) moist; weak medium and coarse subangular blocky structure; extremely hard, extremely firm; 11 percent fine and medium masses of calcium carbonate in upper part; few vertical dark grayish brown (10YR 4/2) streaks; strongly effervescent; moderately alkaline; gradual wavy boundary.

Crky—52 to 80 inches; pink (7.5YR 8/4) weathered shale that has clay texture, pink (7.5YR 7/4) moist; massive; extremely hard, extremely firm; 8 percent masses of calcium carbonate; few gypsum crystals; few light gray (10YR 7/1) pockets of shale; strongly effervescent; moderately alkaline.

The solum thickness and depth to weathered shale ranges from 40 to 60 inches. The clay content of the control section ranges from 35 to 55 percent. Cracks up to 1½ inches extend from the surface to a depth of more than 20 inches. Reaction is slightly alkaline or moderately alkaline.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bw and Bk horizons have hue of 10YR, value of 4 to 7, and chroma of 3 or 4. Texture is clay loam or clay. Masses and concretions of calcium carbonates range from 5 to 15 percent.

The BCk horizon has hue of 10YR, value of 6 or 7, and chroma of 2 to 4. It has up to 10 percent by volume of masses and concretions of calcium carbonate. Calcium carbonate equivalent ranges from 5 to 15 percent. Some pedons have a BCky horizon with similar colors. It has 0 to 2 percent gypsum crystals.

The Crky horizon has hue of 7.5YR or 10YR, value of 7 or 8, and chroma of 2 to 4. It has up to 5 percent by volume masses of calcium carbonate and up to 2 percent gypsum crystals. Calcium carbonate equivalent ranges from 5 to 15 percent.

Shalba Series

The Shalba series consists of soils that are shallow to sandstone. They are gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in tuffaceous fine grained sandstone. Slope ranges from 1 to 5 percent. Soils of the Shalba series are clayey, smectitic, thermic, shallow Udic Haplustalfs.

Typical pedon of Shalba fine sandy loam, 1 to 5 percent slopes; from the intersection of U.S. Highway 183 and Farm Road 2067 12.0 miles southeast of Gonzales, 7.0 miles southwest on Farm Road 2067 to the intersection with county road in Cheapside, 2.6 miles west on county road, 1.1 mile north on county road, and 100 feet east in pastureland. USGS Cheapside topographic quadrangle; lat. 29 degrees 16 minutes 57 seconds N. and long. 97 degrees 26 minutes 54 seconds W.

A—0 to 5 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, friable; many very fine and few fine roots; common fine pores; few krotovinas; few siliceous pebbles; slightly acid; abrupt wavy boundary.

Bt—5 to 18 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate fine and medium angular blocky structure; very hard, very firm; common very fine and fine roots; common fine pores; few pressure faces; few clay films on faces of peds; moderately acid; clear wavy boundary.

Cr—18 to 80 inches; pale yellow (5Y 7/3) weakly cemented siltstone with clay loam texture; pale olive (5Y 6/3) moist; massive; hard, firm; few fine masses of calcium carbonate; slightly acid.

The solum thickness and depth to paralithic contact range from 14 to 20 inches. The clay content in the control section ranges from 40 to 50 percent.

The A horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has few siliceous pebbles. Reaction is very strongly acid to slightly acid.

The Bt horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 2. Masses of iron in shades of red, yellow, or brown range from none to few. Reaction ranges from very strongly acid to moderately acid.

The Cr horizon has hue of 10YR to 5Y, value of 6 to 8, and chroma of 2 or 3. It is weakly cemented tuffaceous sandstone, tuffaceous siltstone, or tuffaceous clay with a fine sandy loam, loam, or clay loam texture.

Shiner Series

The Shiner series consists of soils that are shallow to sandstone. They are gently sloping to strongly sloping, well drained, moderately permeable soils on uplands. These soils formed in calcareous sandstone. Slope ranges from 3 to 12 percent. Soils of the Shiner series are loamy, carbonatic, hyperthermic, shallow Udic Calciustepts.

Typical pedon of Shiner sandy clay loam, 5 to 12 percent slopes; from the intersection of U.S. Highway 183 and U.S. Highway 90A in Gonzales, 12.5 miles east on U.S. Highway 90A, 1.7 miles south on Farm Road 443, 0.2 mile southeast on county road, 0.75 mile east on county road, and 100 feet south in rangeland. USGS Shiner topographic quadrangle; lat. 29 degrees 26 minutes 16 seconds N. and long. 97 degrees 14 minutes 57 seconds W.

A—0 to 8 inches; light brownish gray (10YR 6/2) fine sandy loam, grayish brown (10YR 5/2) moist; weak fine subangular blocky structure; hard, friable; many very fine and fine roots; common very fine and fine pores; few dark grayish brown (10YR 4/2) wormcasts; 2 percent sandstone fragments; slightly effervescent; moderately alkaline; clear smooth boundary.

Bk—8 to 16 inches; very pale brown (10YR 7/4) sandy clay loam, light yellowish brown (10YR 6/4) moist; few fine distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; hard, friable; common very fine roots; common fine and medium masses and concretions of calcium carbonate; 10 percent sandstone fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Crk—16 to 35 inches; very pale brown (10YR 8/4) weakly cemented sandstone interbedded with seams of massive very pale brown (10YR 7/4) fine sandy loam; common medium and coarse distinct yellowish brown (10YR 5/8) mottles; extremely hard, firm; common fine and medium masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual smooth boundary.

2BCk—35 to 80 inches; very pale brown (10YR 8/4) fine sandy loam, very pale brown (10YR 7/4) moist; massive; hard, friable; common stratified seams with sandy and loamy materials; common fine and medium masses of calcium carbonate; strongly effervescent; moderately alkaline.

The solum thickness and depth to soft sandstone bedrock ranges from 10 to 20 inches. The calcium carbonate equivalent of the control section ranges from 40 to 70 percent. Calcareous sandstone fragments in the A horizon range from 0 to 5 percent and from 10 to 15 percent in the Bk horizon.

The A horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3.

The Bk horizon has hue of 10YR, value of 6 to 8, and chroma of 2 to 4. Texture is fine sandy loam or sandy clay loam.

The 2Crk horizon and 2BCk horizon have hue of 10YR or 2.5Y, value of 6 to 8, and chroma of 3 to 5. The 2Crk is weakly to strongly cemented sandstone.

Shiro Series

The Shiro series consists of soils that are moderately deep to sandstone. They are very gently sloping to gently sloping, well drained, slowly permeable soils on uplands. These soils formed in sandstone and tuffaceous shales. Slope ranges from 1 to 5 percent. Soils of the Shiro series are fine, mixed, active, thermic Udic Paleustalfs.

Typical pedon of Shiro loamy fine sand, 1 to 5 percent slopes; from the intersection of Texas Highway 97 and Farm Road 1116 about 2 miles southwest of Gonzales, 9.3 miles south on Farm Road 1116, 3.6 miles east on county road, and 75 feet north in rangeland. USGS Cheapside topographic quadrangle; lat. 29 degrees 19 minutes 38 seconds N. and long. 97 degrees 26 minutes 39 seconds W.

A—0 to 3 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable; common very fine and fine roots; moderately acid; abrupt smooth boundary.

E—3 to 8 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable; common very fine and fine roots; moderately acid; abrupt smooth boundary.

Bt1—8 to 12 inches; reddish brown (5YR 5/4) clay, reddish brown (5YR 4/4) moist; moderate fine and medium angular blocky structure; very hard, very firm; common very fine roots; few clay films on faces of peds; few fine distinct dark reddish gray (5YR 4/2) organic coats on peds faces; strongly acid; clear smooth boundary.

Bt2—12 to 34 inches; light gray (10YR 7/2) clay, light brownish gray (10YR 6/2) moist; weak medium angular blocky structure; very hard, very firm; common very fine roots; few clay films on faces of peds; few masses of fine iron-manganese; few fine distinct strong brown (7.5YR 5/6) masses of iron in ped interiors; moderately acid; clear smooth boundary.

Cr—34 to 80 inches; very pale brown (10YR 7/3) weakly cemented sandstone with a sandy clay loam texture, very pale brown (10YR 7/3) moist; few fine distinct strong brown (7.5YR 5/6) masses of iron in ped interiors; massive; very hard, very firm; neutral.

The solum thickness and depth to a paralithic contact ranges from 20 to 40 inches. The clay content in the control section ranges from 35 to 45 percent. Base saturation is 75 percent or more in the argillic horizon.

The A horizon has hue of 10YR, value of 5 or 6, and chroma of 3. Reaction ranges from strongly acid to slightly acid.

The E horizon has hue of 10YR, value 5 to 7, and chroma of 2 or 3. Reaction ranges from strongly acid to slightly acid.

The Bt horizon in the upper part has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. Texture is clay loam, sandy clay, or clay. Reaction ranges from very strongly acid to moderately acid.

The lower part of the Bt horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2. Texture is clay loam, sandy clay, or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction ranges from very strongly acid to neutral.

The Cr horizon has hue of 10YR or 2.5Y, value of 7 or 8, and chroma of 1 to 3. It is weakly or strongly cemented tuffaceous sandstone.

Silstid Series

The Silstid series consists of very deep, very gently sloping and gently sloping, well drained, moderately permeable soils on uplands. These soils formed in sandy and loamy sediments on uplands. Slope ranges from 1 to 5 percent. Soils of the Silstid series are loamy, siliceous, semiactive, thermic, Arenic Paleustalfs.

Typical pedon of Silstid loamy fine sand, 1 to 5 percent slopes; from the intersection of U.S. Highway 90 and Farm Road 1115 in Waelder, 4.0 miles west on U.S. Highway 90, 0.4 miles north on county road, and 50 feet east in rangeland.

USGS Waelder topographic quadrangle; lat. 29 degrees 42 minutes 13 seconds N. and long. 97 degrees 22 minutes 04 seconds W.

A—0 to 26 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; weak fine granular; slightly hard, very friable; many fine, common medium, and few coarse roots; few fine pores; few ironstone pebbles; neutral; clear smooth boundary.

E—26 to 30 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; weak fine granular structure; slightly hard, very friable; many fine and common medium and few coarse roots; few fine pores; few ironstone pebbles; slightly acid; abrupt smooth boundary.

Bt1—30 to 47 inches; brownish yellow (10YR 6/6) sandy clay loam, yellowish brown (10YR 5/6) moist; moderate fine subangular blocky structure; hard, firm; few fine roots; few fine pores; common clay films on faces of peds; few grayish brown (10YR 5/2) coatings along root channels; few fine faint brownish yellow (10YR 6/8) and common fine and medium prominent red (2.5YR 4/8) masses of iron in ped interiors; few ironstone pebbles; slightly acid; gradual smooth boundary.

Bt2—47 to 54 inches; yellow (10YR 7/6) sandy clay loam, brownish yellow (10YR 6/6) moist; moderate medium subangular blocky structure; hard, firm; few fine roots; few fine pores; few thin clay films on faces of peds; few brown (7.5YR 4/4) stains along root channels; many fine and medium prominent red (2.5YR 4/8) masses of iron in ped interiors; few ironstone pebbles; slightly acid; gradual smooth boundary.

Bt3—54 to 80 inches; mottled yellow (10YR 7/8), brownish yellow (10YR 6/6), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; hard, firm; few fine roots; few fine pores; common clay films on faces of peds; common light brownish gray (10YR 6/2) streaks of uncoated sand grains; few ironstone pebbles; slightly acid.

The solum thickness is 60 to more than 80 inches. The clay content in the control section ranges from 18 to 32 percent. Ironstone pebbles range from 0 to 2 percent through the solum.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 2 to 4. The E horizon is 1 to 2 units of value higher than the A horizon. Reaction ranges from moderately acid to neutral.

The Bt horizon has hue of 5YR to 10YR, value of 5 to 7, and chroma of 6 to 8. Texture is fine sandy loam, loam, or sandy clay loam. Masses of iron in shades of red, yellow, or brown range from few to common. Streaks or pockets of uncoated sand grains in shades of gray range from 1 to 3 percent. Reaction ranges from strongly acid to slightly acid.

Silvern Series

The Silvern series consists of very deep, very gently sloping to moderately sloping, well drained, moderately permeable soils on uplands. These soils formed in thick sandy and gravelly ancient alluvium. Slope ranges from 1 to 8 percent. Soils of the Silvern series are loamy-skeletal, siliceous, active, thermic Grossarenic Paleustalfs.

Typical pedon of Silvern very gravelly loamy fine sand, 1 to 8 percent slopes; from the intersection of U.S. Highway 183 and Farm Road 2067, 1.1 mile southeast on U.S. Highway 183, and 100 feet east in pasture. USGS Hochheim topographic quadrangle; lat. 29 degrees 20 minutes 53 seconds N. and long. 97 degrees 19 minutes 50 seconds W.

A—0 to 14 inches; light brownish gray (10YR 6/2) very gravelly loamy fine sand, brown (10YR 4/3) moist; single grain; loose; many fine and medium roots; common fine pores; 55 percent siliceous pebbles; 1 percent cobbles; moderately acid; clear smooth boundary.

E—14 to 69 inches; very pale brown (10YR 7/3) very gravelly loamy fine sand, pale brown (10YR 6/3) moist; single grain; loose; few fine and medium roots; 55 percent siliceous pebbles; 1 percent cobbles; neutral; clear smooth boundary.

Bt—69 to 80 inches; light gray (10YR 7/2) very gravelly sandy clay loam, light gray (10YR 7/2) moist; weak fine and medium subangular blocky structure; hard, friable; few very fine and fine roots; few clay films on faces of peds; common medium and coarse dark red (2.5YR 3/6) and few fine prominent yellowish red (5YR 4/6) masses of iron in ped interiors; 55 percent siliceous pebbles; moderately acid; gradual smooth boundary.

The solum thickness ranges from 60 to more than 80 inches. The clay content in the control section ranges from 18 to 35 percent. Siliceous pebbles range from 35 to 60 percent. Cobbles range from 5 to 30 percent.

The A horizon has hue of 7.5YR and 10YR, value of 5 to 7, and chroma of 2 to 4. The E horizon is 1 to 2 units of value higher than the A horizon. The combined thickness of the A and E horizons is 40 to 70 inches. Reaction ranges from strongly acid to slightly acid.

The Bt horizon has a hue of 5YR to 10YR, value of 3 to 7, and chroma of 2 to 6. Masses of iron in shades of red, yellow, or brown range from few to common. Iron depletions in shades of gray range from few to common. Reaction is strongly acid or moderately acid.

Singleton Series

The Singleton series consists of soils that are moderately deep to sandstone. They are nearly level to gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed from tuffaceous siltstones and sandstone material. Slope ranges from 0 to 5 percent. Soils of the Singleton series are fine, smectitic, thermic Udic Paleustalfs.

Typical pedon of Singleton fine sandy loam, 1 to 5 percent slopes; from the intersection of U.S. Highway 90 and Farm Road 1680 in Waelder, Texas, 5.6 miles southeast on Farm Road 1680, 1.3 miles northeast on county road, 1.1 mile east, and 1,000 feet south in pastureland. USGS Flatonia topographic quadrangle; lat. 29 degrees 38 minutes 58 seconds N. and long. 97 degrees 11 minutes 17 seconds W.

A—0 to 7 inches; very pale brown (10YR 7/3) fine sandy loam, very pale brown (10YR 7/3) moist; weak fine granular structure; slightly hard, very friable; many very fine and few fine roots; common fine pores; few siliceous pebbles; slightly acid; abrupt smooth boundary.

Bt1—7 to 21 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate fine and medium angular blocky; very hard, very firm; common very fine and few fine roots; common fine prominent yellowish red (5YR 5/6), and common fine and medium prominent yellow (2.5Y 7/6) masses of iron on faces of peds; few pressure faces; few clay films on faces of peds; few thin coats of sand; moderately acid; gradual smooth boundary.

Bt2—21 to 33 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate medium angular blocky; very hard, very firm; few very fine roots; common fine prominent yellow (2.5Y 7/6) masses of iron on faces of peds; few fine faint light brownish gray (10YR

6/2) iron depletions along faces of peds and root channels; few wormcasts; few pressure faces; few clay films on faces of peds; moderately acid; gradual smooth boundary.

BCt—33 to 37 inches; very pale brown (10YR 7/4) sandy clay loam, light yellowish brown (10YR 6/4) moist; weak medium subangular blocky structure; very hard, firm; few fine faint brownish yellow (10YR 6/6) masses of iron on faces of peds; few fine threads and masses of calcium carbonate; few fine faint brownish yellow (10YR 6/6) masses of iron on faces of peds; neutral; gradual smooth boundary.

Cr—37 to 80 inches; light gray (2.5Y 7/2) weakly cemented sandstone containing thin layers of sandy clay loam, light brownish gray (2.5Y 6/2) moist; massive; very hard, very firm; few masses of salts; slightly alkaline.

The solum thickness and depth to a paralithic contact ranges from 20 to 40 inches. The clay content in the control section ranges from 35 to 45 percent with the average ranging from 35 to 40 percent. Base saturation is 75 percent or more in the argillic horizon.

The A horizon has hue of 10YR, value of 5 to 7, and chroma of 2 or 3. Some pedons have few siliceous pebbles. Reaction ranges from strongly acid to slightly acid.

The Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 3. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction ranges from very strongly acid to moderately acid.

The lower part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3. Texture is clay loam, sandy clay, or clay. Masses of iron in shades of yellow or brown range from few to common. Some pedons have few iron-manganese concretions. Reaction ranges from very strongly acid to moderately acid.

The BCt horizon has hue of 10YR, value of 6 or 7, and chroma of 4. Texture is sandy clay loam or clay loam. Masses of iron in shades of yellow or brown range from none to few. There are few threads and masses of salt. Reaction ranges from very strongly acid to slightly alkaline.

The Cr horizon has hue of 2.5Y, value of 6 or 7, and chroma of 2. Masses of iron in shades of yellow or brown range from few to common. Iron depletions in shades of gray range from few to common.

Styx Series

The Styx series consists of very deep, nearly level and very gently sloping, well drained, moderately permeable soils on high stream terraces. These soils formed in sandy and loamy sediments. Slope ranges from 0 to 2 percent. Soils of the Styx series are loamy, siliceous, active, thermic Arenic Paleustalfs.

Typical pedon of Styx series loamy fine sand, 0 to 2 percent slopes; from the intersection of Texas Highway 304 and Texas Highway 97 north of Gonzales, 1.9 miles north on Texas Highway 304, 1.5 miles north on county road, 1.1 miles east, and 37 feet in pasture. USGS Waelder topographic quadrangle; lat. 29 degrees 39 minutes 11 seconds N. and long. 97 degrees 21 minutes 04 seconds W.

A—0 to 12 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 5/3) moist; single grain; loose; many fine and medium roots, slightly acid; clear smooth boundary.

E—12 to 27 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; single grain, loose; few fine and medium roots in upper part of layer; moderately acid; abrupt smooth boundary.

Bt1—27 to 32 inches; brownish yellow (10YR 6/6) sandy clay loam, yellowish brown (10YR 5/6) moist; weak medium subangular blocky structure; hard, firm; few fine roots; common clay films on faces of peds; few medium prominent red (2.5YR 5/6) masses of iron in ped interiors; few fine siliceous pebbles; moderately acid; gradual smooth boundary.

Bt2—32 to 55 inches; yellow (10YR 7/6) sandy clay loam, brownish yellow (10YR 6/6) moist; weak medium subangular blocky structure; very hard, firm; few fine roots; few uncoated sand grains; few clay films on faces of peds; common prominent red (2.5YR 4/6) masses of iron in ped interiors; few ironstone pebbles; strongly acid; gradual smooth boundary.

Bt/E—55 to 80 inches; yellow (10YR 7/8) sandy clay loam, brownish yellow (10YR 6/8) moist; weak fine subangular blocky structure; very hard, firm; few fine roots; common clay films on faces of peds; 5 to 8 percent light gray uncoated sand grains on faces of peds; few medium prominent light red (2.5YR 6/8) masses of iron in ped interiors; common medium distinct light brownish gray (10YR 6/2) iron depletions on faces of peds; few fine and medium siliceous pebbles; strongly acid.

The solum thickness is 60 to more than 80 inches. The clay content in the control section ranges from 25 to 35 percent. Ironstone pebbles range from none to few throughout the solum.

The A horizon has a hue of 10YR, value of 5 or 6, and chroma of 2 to 4. The E horizon is 1 to 2 units of value higher than the A horizon. Reaction ranges from strongly acid to neutral. The combined thickness of the A and E horizons ranges from 20 to 30 inches.

The Bt horizon has a hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 6 to 8. Masses of iron in shades of red, yellow, or brown and iron depletions in shades of gray range from none to few in the upper part of the Bt and range from few to many in the lower part. Reaction ranges from strongly acid to slightly acid.

The Bt/E horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 8. Masses of iron in shades of red, yellow, or brown range from common to many. Iron depletions in shades of gray range from common to many. Uncoated sand grains range from 5 to 10 percent. Reaction ranges from strongly acid to slightly acid.

The C horizon, where present, has color, texture and reaction similar to the Bt/E horizon.

Sunev Series

The Sunev series consists of very deep, gently sloping to moderately steep, well drained, moderately permeable soils on steep terraces or colluvial footslopes. These soils formed in loamy soil materials. Slope ranges from 3 to 15 percent. Soils of the Sunev series are fine-loamy, carbonatic, thermic Udic Calciustolls.

Typical pedon of Sunev loam, 3 to 5 percent slopes; from the intersection of U.S. Highway 90A and U.S. Highway 183 in Gonzales, 3.5 miles west on U.S. Highway 90A, 2.1 miles northwest on farm road, 1.65 miles northeast on county road, and 100 feet south in pasture. USGS Cost topographic quadrangle; lat. 29 degrees 32 minutes 24 seconds N. and long. 97 degrees 31 minutes 02 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, firm; common very fine and fine roots; common very fine and fine pores; few fine concretions of calcium carbonate; few fine fragments of snail shells; slightly effervescent; moderately alkaline; clear smooth boundary.

A—9 to 15 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm; common very fine and fine roots; common very fine and fine pores; few fine concretions and threads of calcium carbonate; few fine fragments of snail shells; slightly effervescent; moderately alkaline; clear smooth boundary.

Bk1—15 to 28 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; hard, firm; common very fine roots; few fine pores; 15 percent fine concretions and threads of calcium carbonate; few fine fragments of snail shells; 45 percent calcium carbonate equivalent; violently effervescent; moderately alkaline; gradual smooth boundary.

Bk2—28 to 45 inches; very pale brown (10YR 7/3) silty clay loam, very pale brown (10YR 7/3) moist; moderately fine and medium angular blocky structure; hard, firm; few very fine roots; 30 percent fine and medium masses and threads of calcium carbonate; few fine fragments of snail shells; 50 percent calcium carbonate equivalent; violently effervescent; moderately alkaline; gradual smooth boundary.

Bk3—45 to 62 inches; very pale brown (10YR 7/4) loam, light yellowish brown (10YR 6/4) moist; common fine faint brownish yellow (10YR 6/6) masses of iron on peds surfaces; weak fine and medium subangular blocky structure; hard, friable; few very fine roots; 35 percent fine concretions, masses, and threads of calcium carbonate; few fine fragments of snail shells; 50 percent calcium carbonate equivalent; violently effervescent; moderately alkaline; gradual smooth boundary.

Bk4—62 to 80 inches; light gray (10YR 7/2) loam, light brownish gray (10YR 6/2) moist; common fine faint yellow (10YR 7/6) masses of iron on peds surfaces; weak fine subangular blocky structure; slightly hard, friable; few fine concretions of calcium carbonate; few fine fragments of snail shells; slightly effervescent; moderately alkaline.

The solum thickness ranges from 40 to 80 inches. The clay content ranges from 18 to 35 percent. Calcium carbonate equivalent in the control section ranges from 40 to 70 percent. Concretions, masses, and threads of calcium carbonate range from 15 to 65 percent. Fragments of snail shells range from few to common. Siliceous and limestone pebbles range from 0 to 15 percent.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bk horizon has hue of 5YR to 10YR, value of 4 to 7, and chroma of 2 to 4. Texture is loam, clay loam, or silty clay loam. Redoximorphic features in shades of yellow or brown range from none to few. Weakly cemented limestone occurs below 40 inches in some pedons.

Tabor Series

The Tabor series consists of very deep, nearly level and very gently sloping, moderately well drained, very slowly permeable soils on stream terraces and remnants of terraces associated with uplands. These soils formed in clayey and loamy sediments. Slope ranges from 0 to 3 percent. Soils of the Tabor series are fine, smectitic, thermic Oxyaquic Vertic Paleustalfs.

Typical pedon of Tabor fine sandy loam, 0 to 1 percent slopes; from the intersection of Farm Road 1296 and Farm Road 1115 in Waelder, 1.4 miles northwest on Farm Road 1296, 1.8 miles north on county road, and 200 feet west in rangeland. USGS Waelder topographic quadrangle; lat. 29 degrees 44 minutes 53 seconds N. and long. 97 degrees 17 minutes 44 seconds W.

A—0 to 13 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; weak moderate subangular blocky structure; hard, friable; many fine, medium, and few coarse roots; moderately acid; abrupt wavy boundary.

Bt—13 to 25 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; moderate medium angular blocky structure; very hard, very firm; few fine and medium roots; few brown streaks along cracks; common pressure faces; few thin clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron in ped interiors; common fine distinct very dark grayish brown (10YR 3/2) iron depleted coats on faces of peds; strongly acid; gradual wavy boundary.

Btss1—25 to 46 inches; brownish yellow (10YR 6/6) clay, yellowish brown (10YR 5/6) moist; moderate medium angular blocky structure; very hard, very firm; few fine and medium roots; few cracks filled with brown material; few slickensides and common pressure faces; few thin clay films on faces of peds; common fine masses of neutral salts in lower part of layer; few fine black concretions; few medium masses of calcium carbonate; common medium distinct yellowish brown (10YR 5/8) masses of iron in ped interiors; few fine distinct very dark grayish brown (10YR 3/2) iron depleted coats on faces of peds; strongly acid; gradual wavy boundary.

Btss2—46 to 63 inches; yellow (10YR 7/6) clay loam, brownish yellow (10YR 6/6) moist; moderate fine angular blocky structure; very hard, very firm; few fine roots; few slickensides and pressure faces; few thin clay films on faces of peds; few medium and coarse concretions of calcium carbonate; few fine and medium black concretions; few medium distinct yellowish brown (10YR 5/8) masses of iron in ped interiors; few medium distinct light brownish gray (10YR 6/2) iron depletions along roots channels; neutral; gradual wavy boundary.

Btg—63 to 72 inches; light gray (10YR 7/2) sandy clay loam, light brownish gray (10YR 6/2) moist; moderate fine angular blocky structure; hard, firm; few fine roots; few thin clay films on faces of peds; few fine black concretions; few medium distinct brownish yellow (10YR 6/6), common medium prominent yellowish brown (10YR 5/8), and few fine prominent strong brown (7.5YR 5/8) masses of iron in ped interiors; neutral; gradual wavy boundary.

BCtg—72 to 80 inches; light gray (10YR 7/2) sandy clay loam, light gray (10YR 7/2) moist; weak fine angular blocky structure; hard, firm; few fine roots; few thin clay films on faces of peds; few fine black concretions; few medium distinct yellowish brown (10YR 5/6) and common fine distinct brownish yellow (10YR 6/6) masses of iron in ped interiors; few fine distinct gray (10YR 6/1) iron depletions on faces of peds; few gray fragments of shale; slightly alkaline.

The solum thickness ranges from 60 to more than 80 inches. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches. The clay content in the control section ranges from 45 to 55 percent. Slickensides and pressures faces occur from 13 to 63 inches. Siliceous pebbles range from none to few throughout the solum.

The A horizon has a hue of 10YR, value of 4 to 6, and chroma of 2 or 3. The E horizon, where present, is 1 or 2 units of value or chroma higher than the A horizon. Combined thickness of the surface layer ranges from 11 to 18 inches. Reaction ranges from strongly acid to slightly acid.

A BE horizon, where present, has hue of 10YR, value of 5 or 6, and chroma of 3. Texture is fine sandy loam or sandy clay loam. It is thickest in subsoil troughs and absent or thinnest on subsoil crests.

The Bt horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. Masses of iron in shades of yellow or brown range from few to many. Iron depletions in shades of gray range from few to many.

Reaction is very strongly acid or strongly acid.

The Btss horizon has hue of 10YR or 2.5Y, value 5 to 7, and chroma of 4 to 6. Masses of iron in shades of yellow or brown range from few to many. Iron depletions in shades of gray range from few to many. Black concretions and masses range from none to few. Reaction ranges from moderately acid to neutral.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Masses of iron in shades of red, yellow, or brown range from few to many. Iron depletions in shades of gray range from few to many. Texture is sandy clay loam or clay loam, some pedons have clay texture. Reaction ranges from moderately acid to neutral.

The BCtg horizon has hue of 10YR, value of 6 to 7, and chroma of 1 or 2. Texture is clay loam or sandy clay loam. Masses of iron in shades of red, yellow, or brown range from few to many. Iron depletions in shades of gray range from few to many. Black concretions and masses of ferrous manganese range from none to common. Concretions and masses of calcium carbonate range from none to common. Unweathered shale fragments mottled in shades of red, yellow, or gray range from none to common. Reaction ranges from moderately acid to slightly alkaline.

Some pedons have a C horizon. This horizon has colors in shades of brown or gray. It is mottled in shades of red or yellow. It is clay loam, sandy clay loam, or clay. Unweathered shale fragments range from none to common. Concretions of calcium carbonate and gypsum crystals range from none to few. Reaction ranges from moderately acid to moderately alkaline.

Tinn Series

The Tinn series consists of very deep, nearly level, moderately well drained, very slowly permeable soils on flood plains. These soils formed in calcareous clayey alluvium. Slope are 0 to 1 percent. Soils of the Tinn series are fine, smectitic, thermic Typic Hapluderts.

Typical pedon of Tinn clay, frequently flooded; about 4 miles north of Gonzales; from the intersection of U.S. Highway 183 and U.S. Highway 90A in Gonzales, 3.0 miles north along U.S. Highway 183, 1.3 miles west on county road, and 1,300 feet south into pasture. USGS Gonzales North topographic quadrangle; lat. 29 degrees 31 minutes 42 seconds N. and long. 97 degrees 29 minutes 47 seconds W.

A—0 to 8 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure; very hard, very firm; few fine roots; common pressure faces; strongly effervescent; slightly alkaline; abrupt smooth boundary.

Bss1—8 to 20 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium angular blocky structure; extremely hard, very firm; few fine roots; common medium slickensides in lower part of horizon; strongly effervescent; slightly alkaline; gradual wavy boundary.

Bss2—20 to 29 inches; dark grayish brown (2.5Y 4/2) clay, very dark grayish brown (2.5Y 3/2) moist; weak medium and coarse angular blocky structure; very hard, very firm; few fine roots; few vertical cracks; common slickensides and pressure faces; few fine siliceous pebbles; strongly effervescent; slightly alkaline; gradual wavy boundary.

Bss3—29 to 80 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; weak medium and coarse angular blocky structure; very hard, very firm; few fine roots; many prominent slickensides; few fine black concretions; few medium concretions of calcium carbonate; few shell fragments; few siliceous pebbles; strongly effervescent; slightly alkaline.

The solum thickness is greater than 80 inches. The soil is slightly effervescent or strongly effervescent. The clay content of the control section ranges from 40 to 60 percent. Fragments of snail shells and concretions of calcium carbonate range from none to few. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 12 inches. Slickensides are distinct and abundant in the subsoil. Reaction is slightly alkaline or moderately alkaline.

The A horizons have a hue of 10YR, value of 2 or 3, and chroma of 1.

The Bss horizon has a hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3. Masses of calcium carbonate range from none to few.

Tordia Series

The Tordia series consists of deep, very gently sloping, well drained, very slowly permeable soils on uplands. These soils formed in clayey materials over materials weathered from shale and siltstone. Slope ranges from 1 to 3 percent. Soils of the Tordia series are fine, smectitic, hyperthermic Typic Haplusterts.

Typical pedon of Tordia clay, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 8.1 miles south on Farm Road 108, 1.0 mile southwest on county road, 2.1 miles west, 0.8 mile north, and 100 feet west in pastureland. USGS Bald Mound topographic quadrangle; lat. 29 degrees 10 minutes 10 seconds N. and long. 97 degrees 39 minutes 22 seconds W.

A1—0 to 8 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak fine subangular blocky structure; very hard, very firm; common fine roots; slightly alkaline; clear smooth boundary.

A2—8 to 14 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak fine and medium subangular blocky structure; very hard, very firm; few fine roots; common pressure faces; slightly alkaline; gradual wavy boundary.

Bss1—14 to 28 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate fine and medium angular blocky structure that form wedge-shaped aggregates; extremely hard; extremely firm; few fine roots; few very dark gray coatings a ¼ to ¾ inch wide vertical cracks; common pressure faces; common slickensides; slightly alkaline; gradual wavy boundary.

Bss2—28 to 36 inches; light brownish gray (10YR 6/2) clay, dark grayish brown (10YR 4/2) moist; moderate fine and medium angular blocky structure that forms wedge-shaped aggregates; extremely hard; extremely firm; few fine roots; few very dark gray coatings along ¼ to ¾ inch wide vertical cracks; common pressure faces; common slickensides; few fine concretions of calcium carbonate; moderately alkaline; gradual wavy boundary.

BC—36 to 44 inches; very pale brown (10YR 7/4) clay, light yellowish brown (10YR 6/4) moist, weak medium and coarse subangular blocky structure; extremely hard, extremely firm; few thin seams of yellowish red (5YR 5/8) and yellow (5Y 7/6) loamy material; moderately alkaline; gradual wavy boundary.

2Cr—44 to 80 inches; light gray (2.5Y 7/2) weakly cemented shale that has clay texture, light brownish gray (2.5Y 6/2) moist; massive; extremely hard, extremely firm; few cracks filled with thin seams of yellowish red (5YR 5/8) and yellow (5Y 7/6) loamy material in the upper part; moderately alkaline.

The solum thickness ranges from 40 to 60 inches. When dry, cracks 1 to 2 inches wide extend to a depth of 25 to 30 inches. The clay content of the control section ranges from 40 to 60 percent. Pressure faces in the upper 30 inches ranges from few to common. Reaction ranges from neutral to moderately alkaline.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1.

The Bw or Bss horizon has hue of 10YR, value of 2 to 6, and chroma of 1 or 2.

The BC horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. Texture is clay. Some pedons have a BCk horizon with similar colors.

The 2Cr horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 2 or 3. It is weakly cemented shale siltstone that has texture of clay or silty clay. It has few seams of yellow (5Y 7/6) and yellowish red (5YR 5/8) loamy material. Some pedons have few crystals of gypsum.

Tremona Series

The Tremona series consists of very deep, very gently sloping and gently sloping, somewhat poorly drained, very slowly permeable soils on uplands. These soils formed in interbedded sandy, clayey, and loamy materials. Slope ranges from 1 to 5 percent. Soils of the Tremona series are clayey, mixed, active, thermic Aquic Arenic Paleustalfs.

Typical pedon of Tremona loamy fine sand, 1 to 5 percent slopes; from the intersection of U.S. Highway 90 and Farm Road 794 in Harwood, 2 miles east on U.S. Highway 90 to intersection with county road, 0.5 mile north, 0.25 mile east on county road, and 0.5 mile east from county road in pastureland. USGS Sandy Fork topographic quadrangle; lat. 29 degrees 40 minutes 38 seconds N. and long. 97 degrees 27 minutes 58 seconds W.

A—0 to 14 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable; many very fine and fine roots; common fine pores; few siliceous pebbles; slightly acid; clear smooth boundary.

E—14 to 30 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, friable; common fine roots; common fine pores; few distinct dark yellowish brown (10YR 4/4) organic stains along root channels; 5 percent siliceous pebbles; slightly acid; clear smooth boundary.

Btg1—30 to 41 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; moderate fine subangular blocky structure; very hard, very firm; few very fine and fine roots; few pressure faces; few clay films on faces of peds; common fine distinct yellowish brown (10YR 5/4), common fine prominent red (2.5YR 4/8) masses of iron in ped interiors; few siliceous pebbles; slightly acid; gradual smooth boundary.

Btg2—41 to 48 inches; light gray (10YR 7/2) sandy clay, light brownish gray (10YR 6/2) moist; moderate medium subangular blocky structure; very hard, very firm; few very fine roots; few clay films on faces of peds; common fine and medium prominent red (2.5YR 4/8), common fine prominent yellowish brown (10YR 5/8) masses of iron in ped interiors; slightly acid; gradual smooth boundary.

Btg3—48 to 56 inches; light gray (10YR 7/2) sandy clay, light gray (10YR 7/2) moist; moderate medium subangular blocky structure; hard, firm; few very fine and fine roots; few distinct clay films on faces of peds; common medium prominent yellowish red (5YR 5/8) masses of iron in ped interiors; few fine faint gray (10YR 5/1) iron depletions along root channels; moderately acid; gradual smooth boundary.

BC1—56 to 69 inches; very pale brown (10YR 8/2) sandy clay loam, light gray (10YR 7/2) moist; weak medium subangular blocky structure; hard, firm; few very fine roots; common medium prominent yellowish brown (10YR 5/8), common fine prominent reddish brown (2.5YR 5/4) masses of iron in ped interiors; few fine faint gray (10YR 6/1) iron depletions on faces of peds; moderately acid; gradual smooth boundary.

BC2—69 to 80 inches; light gray (2.5Y 7/2) sandy clay loam, light brownish gray (2.5Y 6/2) moist; massive; hard, firm; few very fine roots; few fine crystals of gypsum; common medium prominent yellowish brown (10YR 5/8) masses of iron in ped interiors; moderately acid.

The solum thickness ranges from 60 to more than 80 inches. The clay content in the control section ranges from 35 to 50 percent. The combined thickness of the A and E horizons ranges from 20 to 40 inches.

A temporary perched water table is often present in and above the Btg1 horizon following heavy rains.

The A horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. The E horizon is one or two units of value greater than the A horizon. Reaction is strongly acid to slightly acid.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. Texture is sandy clay or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction is very strongly acid to moderately acid.

The BC horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 2 to 4. Texture is sandy clay loam, clay loam, or sandy clay. Masses of iron in shades of yellow or brown range from few to common. Iron depletions in shades of gray range from few to common. Concretions and masses of calcium carbonate range from none to few. Reaction is strongly acid to moderately alkaline.

Waelder Series

The Waelder series (fig. 30) consists of very deep, nearly level and very gently sloping, well drained, moderately rapid permeable soils on flood plains. These soils formed in moderately coarse textured loamy alluvium. Slope ranges from 0 to 2 percent. Soils of the Waelder series are coarse-loamy, siliceous, superactive, thermic Udifluventic Haplustepts

Typical pedon of Waelder loam, 0 to 1 percent slopes, frequently flooded; from the intersection of U.S. Highway 90, and Texas Highway 304 about 5.2 miles east of Harwood, 3.5 miles east on U.S. Highway 90, 0.2 mile south on county road, 1.9 miles west then south, and 500 feet west in rangeland. USGS Sandy Fork topographic quadrangle; lat. 29 degrees 39 minutes 59 seconds N. and long. 97 degrees 23 minutes 59 seconds W.

A1—0 to 6 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable; many very fine, fine, and common medium roots; many very fine and fine pores; few wormcasts; few dark brown krotovinas; few pebbles; moderately acid; clear smooth boundary.

A2—6 to 16 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak coarse prismatic structure parting to weak fine and medium subangular blocky; slightly hard, friable; many very fine, fine, and common medium roots; many very fine and fine pores; few dark brown krotovinas; few siliceous pebbles; moderately acid; clear smooth boundary.

Bw1—16 to 31 inches; brownish yellow (10YR 6/6) very fine sandy loam, yellowish brown (10YR 5/6) moist; weak very coarse prismatic structure parting to weak fine subangular blocky; slightly hard, friable; common very fine, fine, and few medium roots; common very fine and fine pores; few dark brown krotovinas; slightly acid; clear smooth boundary.

Bw2—31 to 37 inches; yellowish brown (10YR 5/6) very fine sandy loam, dark yellowish brown (10YR 4/6) moist; weak very coarse prismatic structure parting to weak fine and medium subangular blocky; hard, friable; common very fine and fine roots; common fine pores; few fine prominent yellowish red (5YR 5/6) masses of iron on surfaces of peds; few dark brown krotovinas; slightly acid; clear smooth boundary.

Bw3—37 to 43 inches; light yellowish brown (10YR 6/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; weak very coarse prismatic structure parting to weak fine subangular blocky; slightly hard, very friable; common very fine and fine roots; common fine pores; few fine distinct strong brown (7.5YR 4/6) masses of iron on surfaces of peds; slightly acid; clear smooth boundary.

Bw4—43 to 51 inches; very pale brown (10YR 7/4) very fine sandy loam, light yellowish brown (10YR 6/4) moist; weak very coarse prismatic structure parting to weak fine subangular blocky; slightly hard, very friable; common very fine and fine roots; common fine pores; few fine distinct strong brown (7.5YR 4/6) masses of iron in ped interiors; few thin strata of loamy fine sand; neutral; clear smooth boundary.

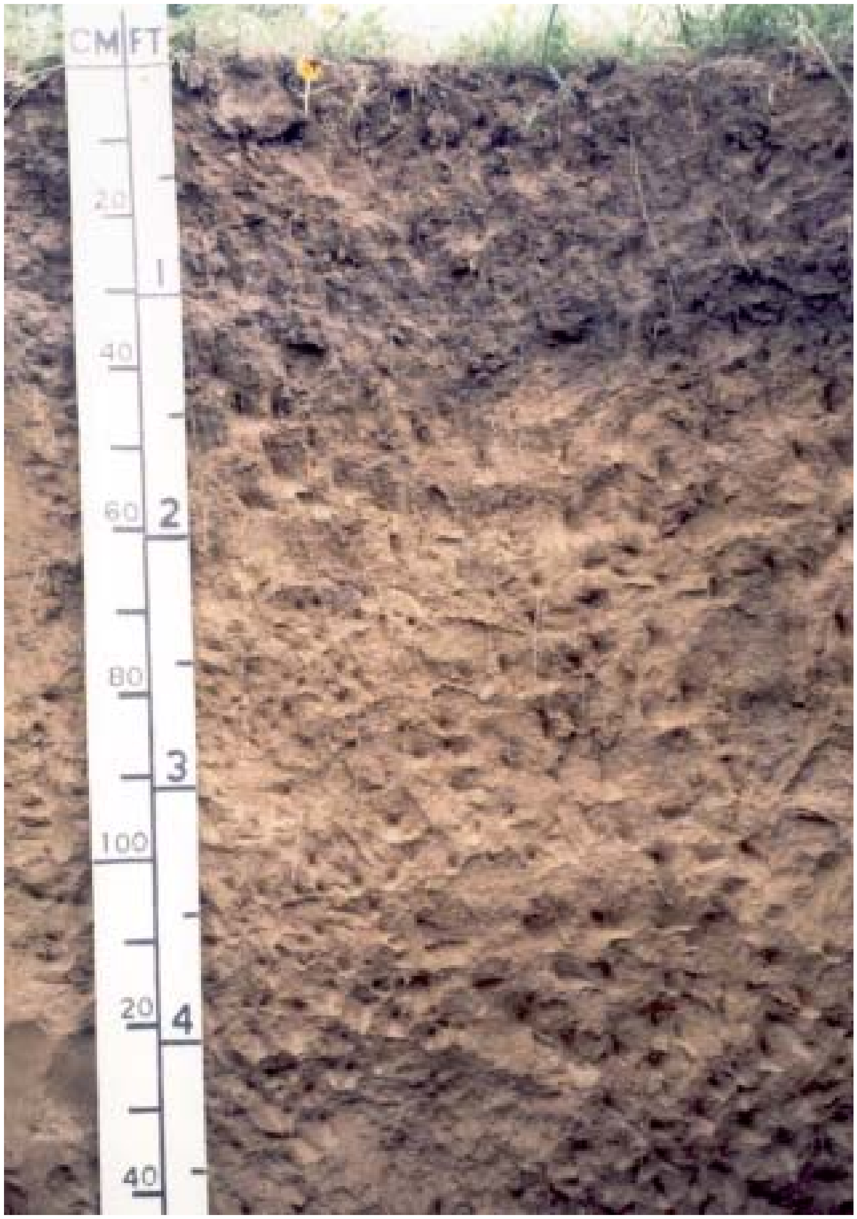

Figure 30.—A profile of Waelder loam, 0 to 1 percent slopes, frequently flooded. Flooding events have deposited loamy and sandy materials.

Ab1—51 to 67 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable; common very fine and fine roots; common fine pores; slightly acid; clear smooth boundary.

Ab2—67 to 78 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; single grain; loose; few fine prominent yellowish red (5YR 4/6) masses of iron inside peds; slightly acid; abrupt smooth boundary.

Bwb—78 to 80 inches; grayish brown (10YR 5/2) sandy clay loam, dark grayish brown (10YR 4/2) moist; weak fine angular blocky structure; hard, firm; few fine faint grayish brown (10YR 5/2) iron depletions and common fine prominent yellowish red (5YR 5/6) masses of iron inside peds; slightly acid.

The solum thickness is more than 80 inches. The clay content in the control section ranges from 8 to 18 percent. Thin strata in the B horizons range from none to few. Siliceous pebbles range from none to few. The soil has an irregular decrease in organic carbon between 10 and 50 inches of the soil surface.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 4. It is fine sandy loam or loam. Reaction is moderately acid to neutral.

The Bw horizons have hue of 10YR, value of 5 to 7, and chroma of 3 to 8. It is loamy fine sand, very fine sandy loam, or loam. Masses of iron in shades of red, yellow, or brown range from none to few. Reaction is slightly acid to slightly alkaline.

The Ab horizons have hue of 10YR, value of 3 or 4, and chroma of 2 to 4. It is loamy fine sand, fine sandy loam, or loam. Masses of iron in shades of red or brown range from none to few. Reaction is slightly acid to slightly alkaline.

The Bwb horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It is loamy fine sand, fine sandy loam, or sandy clay loam. Masses of iron in shades of red, yellow, or brown range from none to few. Iron depletions in shades of gray range from none to few. Reaction is neutral or slightly alkaline.

Weesatche Series

The Weesatche series consists of very deep, very gently sloping and gently sloping, well drained, moderately permeable soils on uplands. These soils developed over alkaline loamy sediments. Slope ranges from 2 to 5 percent. Soils of the Weesatche series are fine-loamy, mixed, superactive, hyperthermic Typic Argiustolls.

Typical pedon of Weesatche fine sandy loam, 2 to 5 percent slopes; from the intersection of U.S. Highway 87 and Farm Road 108 in Smiley, 11.0 miles south on Farm Road 108, and 50 feet east in rangeland. USGS Sample topographic quadrangle; lat. 29 degrees 38 minutes 20 seconds N. and long. 97 degrees 34 minutes 54 seconds W.

A—0 to 11 inches; dark brown (7.5YR 3/2) fine sandy loam, very dark brown (7.5YR 2/2) moist; weak fine subangular blocky structure; slightly hard, friable; many fine and few medium roots; few siliceous pebbles; slightly alkaline; clear smooth boundary.

Bt1—11 to 23 inches; brown (7.5YR 4/3) sandy clay loam, brown (7.5YR 4/3) moist; common fine prominent yellowish red (5YR 4/6) mottles; moderate fine and medium angular blocky structure; hard, firm; common fine and few medium roots; common clay films on faces of peds; few siliceous pebbles; slightly alkaline; gradual smooth boundary.

Bt2—23 to 36 inches; brown (7.5YR 4/4) sandy clay loam, brown (7.5YR 4/4) moist; common fine prominent yellowish red (5YR 5/8) mottles; moderate medium angular blocky structure; hard firm; common clay films on faces of peds; few siliceous pebbles; moderately alkaline; gradual smooth boundary.

Bk—36 to 56 inches; brownish yellow (10YR 6/6) sandy clay loam, yellowish brown (10YR 5/6) moist; weak medium subangular blocky structure; hard, firm; few fine roots; 8 percent fine and medium masses and few fine concretions of calcium carbonate; 30 percent calcium carbonate equivalent; violently effervescent; moderately alkaline; gradual smooth boundary.

BCk—56 to 80 inches; brownish yellow (10YR 6/6) fine sandy loam, brownish yellow (10YR 6/6) moist; few fine roots; few concretions of calcium carbonate; 10 percent calcium carbonate equivalent; moderately alkaline.

The solum thickness is more than 80 inches. The clay content in the control section ranges from 20 to 35 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. Reaction is neutral or slightly alkaline.

The Bt horizons have hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. Texture is sandy clay loam or clay loam. Masses of iron are in shades of red, yellow, or brown. Reaction is slightly alkaline or moderately alkaline.

The Bk horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. Concretions and masses of calcium carbonate range from 10 to 20 percent. Calcium carbonate equivalent ranges from 20 to 35 percent. Some pedons have Btk horizons with similar colors and textures as the Bk horizons.

The BCk horizon has hue of 10YR, value of 6 or 7, and chroma of 3 to 6. Texture is fine sandy loam or sandy clay loam. Concretions and masses of calcium carbonate range from 10 to 20 percent. Calcium carbonate equivalent ranges from 10 to 35 percent.

Wilson Series

The Wilson series consists of very deep, nearly level, moderately well drained, very slowly permeable soils on terraces or terrace remnants on uplands. These soils formed in clayey sediments. Slope are 0 to 1 percent. Soils of the Wilson series are fine, smectitic, thermic Oxyaquic Vertic Haplustalfs.

Typical pedon of Wilson clay loam, 0 to 1 percent slopes; from the intersection of U.S. Highway 90A and Texas Highway 97 in Gonzales, 4.7 miles east on U.S. Highway 90A, 1.7 mile south on county road, 1.1 mile east, 0.5 mile north, and 100 feet west in pastureland; USGS Waelder topographic quadrangle; lat. 27 degrees 32 minutes 03 seconds N. and long. 97 degrees 21 minutes 58 seconds W.

A—0 to 5 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; hard, firm; many very fine and few fine roots; common fine pores; neutral; clear smooth boundary.

Bt—5 to 19 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate medium subangular blocky structure; very hard, very firm; common very fine roots; few fine pores; few pressure faces; few clay films on faces of peds; few siliceous pebbles; neutral; gradual wavy boundary.

Btss1—19 to 28 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; very hard, very firm; few very fine roots; few fine pores; few vertical cracks filled with black (10YR 2/1) material from overlying horizon; few slickensides and common pressure faces; few clay films on faces of peds; few siliceous pebbles; neutral; gradual wavy boundary.

Btssg2—28 to 42 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; extremely hard, extremely firm; few very fine roots; few slickensides and pressure faces; few clay films on faces of peds; few fine and medium concretions of calcium carbonate; slightly effervescent; slightly alkaline; gradual wavy boundary.

Btkssg—42 to 54 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; very hard, very firm; few very fine roots; few slickensides and pressure faces; few clay films on faces of peds; few fine and medium concretions of calcium carbonate; few fine and medium masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

BCk1—54 to 66 inches; very pale brown (10YR 7/3) clay, pale brown (10YR 6/3) moist; weak medium and coarse subangular blocky structure; hard, firm; few very fine roots; common fine and medium concretions of calcium carbonate; few fine and medium masses of calcium carbonate; strongly effervescent; moderately alkaline; clear smooth boundary.

BCk2—66 to 80 inches; very pale brown (10YR 7/4) clay, light yellowish brown (10YR 6/4) moist; weak fine and medium subangular blocky structure; hard, firm; few fine roots; common fine and medium concretions of calcium carbonate; few fine masses of calcium carbonate; strongly effervescent; moderately alkaline.

The solum thickness ranges from 60 to more than 80 inches. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches. The clay content in the control section ranges from 35 to 50 percent. Slickensides or pressure faces range from few to common throughout the subsoil. Redoximorphic features are mainly relict.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Siliceous pebbles range from 0 to 5 percent. Reaction ranges from moderately acid to neutral

The Bt horizon and upper part of the Btss has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1. Texture is clay loam or clay. Masses of iron in shades of yellow or brown range from none to few. Iron depletions in shades of gray ranges from none to few. Reaction is neutral or slightly alkaline.

The Btss or Btkss horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. Texture is clay loam or clay. Masses of iron in shades of yellow or brown range from none to common. Iron depletions in shades of gray range from none to common. Reaction is neutral or slightly alkaline.

The BCk horizon has hue of 10YR or 2.5Y, value of 4 to 7, chroma of 2 or 3. Texture is clay loam or clay. Masses of iron in shades of yellow or brown range from none to few. Iron depletions of gray range from none to few. Concretions and masses of calcium carbonate range from 5 to 10 percent. Calcium carbonate equivalent ranges from 5 to 25 percent.

The C horizon, where present, is shale or marl or stratified layers of shale, marl, and clay.

Zack Series

The Zack series consists of soils that are moderately deep to weathered shale. They are very gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in clayey and loamy sediments. Slope ranges from 1 to 3 percent. Soils of the Zack series are fine, smectitic, thermic Udertic Paleustalfs.

Typical pedon of Zack fine sandy loam, 1 to 3 percent slopes; from the intersection of Texas Highway 97 and Texas Highway 466 in Cost, 2.2 miles south on Texas Highway 466, and 100 feet east in pastureland. USGS Cost topographic quadrangle; lat. 29 degrees 24 minutes 22 seconds N, long. 97 degrees 32 minutes 04 seconds W.

A—0 to 10 inches; brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; hard, very friable; many very fine to medium roots; slightly acid; abrupt wavy boundary.

Bt—10 to 20 inches; red (2.5YR 5/6) clay, red (2.5YR 4/6) moist; moderate medium angular blocky structure; very hard, very firm; common very fine to medium roots; few pressure faces; few clay films on faces of peds; few fine prominent grayish brown (10YR 5/2) iron depletions along root channels; few fine distinct dark reddish brown (5YR 3/4) masses of iron in ped interiors; moderately acid; clear wavy boundary.

Btss—20 to 30 inches; red (2.5YR 5/6) clay, red (2.5YR 4/6) moist; moderate medium angular blocky structure; very hard, very firm; common very fine and fine roots; few cracks; few pressure faces; few slickensides; few clay films on faces of peds; common fine prominent grayish brown (10YR 5/2) iron depletions along root channels; few fine prominent light yellowish brown (10YR 6/4) masses of iron in ped interiors; neutral; clear smooth boundary.

2BC—30 to 38 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; very hard, firm; common fine roots; common fine and medium faint brownish yellow (10YR 6/8) masses of iron on faces and interiors of peds; neutral; clear smooth boundary.

2Cd—38 to 80 inches; very pale brown (10YR 8/3) thinly bedded shale that has a clay loam texture, very pale brown (10YR 7/3) moist; massive; few very pale brown (10YR 8/3) soft shale fragments; neutral.

The solum thickness ranges from 25 to 40 inches. The clay content in the control section ranges from 40 to 60 percent. Iron depletions in shades of gray are present within 30 inches of the surface and range from few to common. Slickensides and pressure faces occur throughout the Bt horizons.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Siliceous pebbles range from 0 to 5 percent. Reaction is moderately acid or slightly acid.

The Bt or Btss horizon has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. Masses of iron in shades of red, yellow, or brown range from few to common. Iron depletions in shades of gray range from none to few. Pressure faces and slickensides range from none to few. Concretions of calcium carbonate range from none to few. Reaction ranges from moderately acid to neutral in the upper part and from moderately acid to moderately alkaline in the lower part.

The 2BC horizon has colors in shades of yellow brown and gray. Texture is sandy clay loam or clay loam. Masses of iron in shades of red range from none to common. Concretions of calcium carbonate range from none to common. Reaction ranges from neutral to moderately alkaline.

The 2Cd horizon has colors in shades of brown or gray. The materials are noncemented shale that has texture of clay loam or sandy clay loam. The material ranges from thinly platy "rock structure" to stratified. Reaction is slightly alkaline to moderately alkaline.

Zulch Series

The Zulch series consists of soils that are moderately deep to weathered shale. They are very gently sloping, moderately well drained, very slowly permeable soils on uplands. These soils formed in alkaline clayey and loamy sediments. Slope ranges from 1 to 3 percent. Soils of the Zulch series are fine, smectitic, thermic Udertic Paleustalfs.

Typical pedon of Zulch fine sandy loam, 1 to 3 percent slopes; from the intersection of Texas Highway 97 and U.S. Highway 90 in Waelder, 3.0 miles south on Texas Highway 97, 0.75 mile south on private road, and 500 feet west in pastureland. USGS Waelder topographic quadrangle; lat. 29 degrees 38 minutes 38 seconds N. and the long. 97 degrees 18 minutes 48 seconds W.

A—0 to 6 inches; grayish brown (10YR 5/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, friable; many very fine and common fine roots; common fine pores; few wormcasts; few pebbles; moderately acid; abrupt wavy boundary.

Bt—6 to 18 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; very hard, very firm; few very fine roots; few pressure faces; few clay films on faces of peds; common fine prominent yellowish red (5YR 5/6) and common fine distinct yellowish brown (10YR 5/6) masses of iron in ped interiors; few pebbles; slightly acid; gradual wavy boundary.

Btss—18 to 32 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; very hard, very firm; few very fine roots; few cracks ½ inch wide; common slickensides and pressure faces; few clay films on faces of peds; few fine concretions of calcium carbonate; common medium prominent strong brown (7.5YR 5/6) masses of iron in ped interiors; neutral; gradual wavy boundary.

BCy—32 to 39 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; hard, firm; few very fine and fine roots; common crystals of gypsum; few light gray fragments of shale; few fine distinct yellowish brown (10YR 5/8) masses of iron in ped interiors; few pebbles; moderately alkaline; clear smooth boundary.

Cd—39 to 80 inches; light gray (2.5Y 7/2) interbedded shale that has clay loam texture; light brownish gray (2.5Y 6/2) moist; massive; very hard, very firm; few very fine roots; few crystals of gypsum; few medium distinct yellowish brown (10YR 5/8) masses of iron in ped interiors; moderately alkaline.

The solum thickness ranges from 30 to 40 inches thick, which corresponds to the depth to underlying siltstone and shale strata. When dry, cracks up to 2 inches wide extend from the surface to a depth of more than 20 inches. The clay content in the control section ranges from 35 to 45 percent. Slickensides and pressure faces occur throughout the subsoil. Siliceous pebbles range from none to few throughout.

The A horizon has colors in hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Reaction is moderately acid to neutral.

The Bt horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. Texture is clay loam, silty clay, or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction ranges from moderately acid to slightly alkaline.

The Btss horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Texture is clay loam, silty clay, or clay. Masses of iron in shades of red, yellow, or brown range from few to common. Reaction ranges from moderately acid to slightly alkaline.

The BCy horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Texture is clay loam or clay. Masses of iron in shades of yellow or brown range from few to common. Crystals of gypsum and concretions of calcium carbonates range from none to common. Reaction ranges from slightly acid to moderately alkaline.

The Cd horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or 3. The parent material is noncemented shale that has a texture of clay loam or clay. Masses of iron in shades of yellow, brown, or gray range from few to common. Crystals of gypsum and concretions of calcium carbonate range from none to common. Reaction is neutral to moderately alkaline.

Formation of the Soils

This section describes the factors of soil formation and relates them to the formation of the soils in Gonzales County. It also describes the surface geology of the survey area.

Factors of Soil Formation

Soil is formed by the action of soil forming processes on material deposited or accumulated by geological forces. The characteristics of a soil at any given point depend on the physical and mineralogical composition of the parent material; the climate under which the soil material has accumulated and has existed since accumulation; the plant and animal life on and in the soil; the relief or lay of the land; and the length of time the forces of soil development have acted on the soil material.

All five factors are important in the genesis of each soil; some have had more influence than others on a given soil.

Parent Material

Parent material is the unconsolidated mass from which a soil forms. It determines the chemical and mineral composition of the soil. In Gonzales County, the parent material consists of unconsolidated sediments of Eocene, Pleistocene, and Holocene epochs. Additional information about parent material is in the section, “Geology.”

Climate

The warm and humid climate in Gonzales County promotes rapid soil development. The climate is uniform throughout the survey area; however its effect is modified locally by runoff. In some areas, the direction of exposure influences the climatic effect. The climate in Gonzales County is not believed to have made major differences in the soils.

Plant and Animal Life

Plants, insects, earthworms, small mammals, micro-organisms, and other living organisms, including human, have contributed to soil development. The addition of organic matter and nitrogen to the soil, the addition and removal of plant nutrients, and changes in structure and porosity are caused by plants, animals, and humans.

Plants probably have affected soil formation in Gonzales County more than other kinds of living organisms. Soils that formed under grasses tend to have a higher content of organic matter in the surface layer than soils that formed under trees.

Relief

Relief, or topography, influences soil development through its effect on drainage, erosion, and plant cover.

The soils in Gonzales County range from nearly level to steep, although most of the county is gently sloping. The nearly level areas consist of flood plains and the lower terraces associated with them. The more sloping areas are confined to the upland soils, with the steep areas being the highest points in the county.

The degree of soil profile development often depends on the amount of moisture in the soil. Navasota soils are in nearly level, somewhat poorly drained areas that receive extra water; therefore, they have developed gleyed characteristics and the horizon development is not as well defined. Edge soils are in more sloping areas that are better drained and exhibit brighter colors and distinct horizons throughout. Soils on footslopes, such as Benchley soils, receive additional organic matter and have a thick, dark surface layer. Soils on adjacent side slopes, such as Crockett soils, have a thin surface layer that is light in color because erosion removes most of the soil as quickly as it forms a surface layer.

Time

A great length of time is required for the formation of soils with distinct horizons. The differences in the length of time that the parent material has been in place generally are reflected in the degree of the horizon development. Young soils have little horizon development, and old soils have well expressed development.

Meguin and Waelder soils are young soils and are on nearly level flood plains. Although they have undergone some horizon development, they closely resemble the loamy and sandy parent material from which they have formed. Benchley and Crockett soils are older soils. They have developed distinct horizons that do not resemble their parent materials.

Processes of Horizon Differentiation

Several processes are involved in the formation of horizons in soils. These processes include accumulation of organic matter, leaching of carbonates and other bases, and formation and translocation of silicate clay minerals. In most soils more than one of these processes has been active in horizon development.

The accumulation of organic matter in the upper part of a profile results in the formation of distinct, dark surface layer. The soils in Gonzales County range from low to high in content of organic matter. Benchley and Carbengle soils have accumulated organic matter and have a dark surface layer.

Carbonates have been leached downward in most of the soils of the county. Much leaching has occurred in the soils that have thick, sandy surface layers, such as Padina and Silstid soils. Carbonates still remain in the profile of the clayey Luling soils.

The translocation of clay minerals has also contributed to horizon development in many soils. Clay minerals are produced by weathering of primary minerals. In many soils, the subsoil has accumulations of clay films in pores and on ped surfaces. These soils were probably leached of carbonates and bases before the translocation of silicate clay took place. A horizon with accumulation of translocated clay is called an argillic horizon. Edge soils, for example, have an argillic horizon.

Geology

Ed Garner, Bureau of Economic Geology, prepared this section.

Gonzales County lies within the West Gulf Coastal Plain Section of the Coastal Plain Geomorphic Province (17). Landscapes in the county are dominantly influenced by varying sediment sources and fluvial processes that have occurred during the Tertiary and Quaternary periods. Eolian processes have had a lesser effect on current landscapes; however, wind blown sediment has had a significant effect locally on soil characteristics.

The entire county is within the Guadalupe River drainage basin. The confluence of the San Marcos River and Peach Creek with the Guadalupe River near the central and southeastern portions of the county, respectively, has resulted in wide expanses of flood plain and terrace areas. Five Mile Creek and its tributaries also have developed significant flood plain and terrace areas in the southern sector of the county.

The older Tertiary geologic outcrops in the county are alternating continental to marine sandstones, shales, and claystones exposed in northeast-southwest trending bands and dip gulfward at a low angle. The alternating lithologies are records of marine transgressions and regressions. A transgression causes a shoreline to retreat landward, decreasing land area and increasing marine sediment deposition. A regression is a withdrawal of the sea, causing an increase in land area and deltaic and fluvial deposition. Wind-born volcanic ash has had a significant influence on mineralogic characteristics of the soil.

Varying degrees of sediment consolidation and cementation have resulted in erosion and weathering unique to each outcrop. Typically, the sandy cemented outcrops will be more resistant to erosion, and weathering will extend to relatively shallow depths, resulting in prominent hills, ridges, and cuestas overlain with coarse textured shallow soils. Conversely, less consolidated and cemented claystones and shales are not as resistant to erosion and weather to greater depths, forming a subdued topography with fine textured deep soils.

Quaternary deposits are continental sediments of fluvial origin and are locally reworked by eolian processes. With the exception of a few outliers, these sediments are very poorly consolidated to unconsolidated, and were deposited by the existing stream channel network. Their lithologies and textures are a reflection of their sources to the north and west. Their textures range from siliceous and calcareous gravel to calcareous clay.

Gonzales County lies within the Luling-Mexia Fault Zone. The zone trends north-northeast and is comprised of a series of normal *en echelon* faults. The hanging walls are downthrown to the southeast and to the northwest. These faults are numerous in Gonzales County; some are mapped and others are not mapped. Most have influenced outcrop periphery and delineation; hence, they have influenced soil locations and extent.

Soil parent materials are derived from Tertiary bedrock outcrops and Quaternary fluvial deposits in Gonzales County. Consequently, the General Soil Map delineations are similar to those of the Geologic Atlas of Texas, Sequin Sheet, and the Geologic Map of Texas (5)(6).

Tertiary Strata

The oldest geologic strata cropping out in the county are Eocene to Miocene sandstones, shales, mudstones, and claystones. These sedimentary strata crop out in bands and are generally parallel to the southeastern county line. The oldest outcrop in Gonzales County is strata in the Eocene age Wilcox Group. The Wilcox Group outcrop is located along the northwestern county line. Tertiary outcrops become progressively younger from northwest to southeast. Tertiary strata consist of the Wilcox Group, Claibourne Group, Jackson Formation, Catahoula Formation, and Oakville Sandstone. Consequently, the youngest Tertiary outcrop band is the Miocene age Oakville Sandstone located in the extreme southeastern and eastern portions of the county.

Wilcox Group

The Wilcox Group is not divided into formations in Gonzales County. Wilcox strata crop out only in the westernmost corner of the county, south of the San Marcos River and west of the ridge formed on the Carrizo Sand. The Wilcox Group outcrop in Gonzales County is mostly mudstone.

Edge soils are the principle series formed over the Wilcox Group outcrop.

Claibourne Group

The Carrizo Sand is about 100 feet thick at its outcrop. It dominates the landscape because of its resistance to erosion. Sandstone ledges have formed a prominent ridge at the county line near Interstate Highway 10. Westward, the ridge is the Capote Hills in Guadalupe County. To the east in Caldwell County it is known as the Iron Mountains. The Carrizo Sand was laid down about 55 million years ago in river valleys that extended from the southern Rocky Mountains across Texas (4).

Deep, sandy soils of the Alum, Padina, and Silstid series, and loamy soils of the Jed and Rosanky series are on the Carrizo Sand.

The Recklaw Formation is dominantly mudstone (16), less than 100 feet thick, which forms an outcrop band 3 to 4 miles wide. Clay-ironstone beds and concretions, formed in the subsoil from glauconite within the formation, cap the crest and upper east slopes of the Carrizo Sand ridge. Glauconite is a hydrous iron-potassium-phosphorus silicate mineral that forms in mud below a sea bottom. The Recklaw Formation records a sudden marine transgression over the alluvial-deltaic Carrizo Sand (7), as indicated by the glauconite and casts of marine snails and clams.

Jedd and Rosanky soils formed on the Recklaw Formation where the clay-ironstone concretions are abundant; elsewhere Edge and Zack soils are mapped.

The Queen City Sand forms a band of low, sandy hills 4 to 7 miles wide south of the San Marcos River, and 2 to 4 miles wide north of the river (5). Much of the sand was deposited on a strandplain as barrier islands and tidal bars in Gonzales County and southward (11). Formation thickness is 200 to 250 feet (5).

Soils formed on the Queen City Sand are the Crockett, Edge, Jedd, Padina, Rosanky, and Silstid series.

The Weches Formation forms an irregular outcrop band 1 to 1.5 miles wide. The formation crops out in the vicinity of the intersection of State Highways 80 and 97 in the southwestern sector of the county, through the communities of Mahalia and Oak Forest, and on to Jeddo in southernmost Bastrop County (5)(6). The formation represents a major transgression of the Gulf of Mexico onto an ancient coastal plain. The formation, 30 to 50 feet thick, is notable for the abundance of glauconite and, where well-exposed, for limestone beds containing abundant marine fossils. Glauconite has weathered to clay-ironstone concretions and layers in the clayey subsoil. Surface expression of faults is more prominent along its outcrop than elsewhere in the county because the formation is thin and easily distinguished from the underlying and overlying sand formations.

The Weches Formation weathered to Jedd, Rosanky, and Silstid soil series.

The Sparta Sand was deposited in a non-marine to nearshore environment. However, it lacks adequate cementation to form erosion resistant sandstone ledges (16). Its outcrop is about 1 mile wide (5) of low, rolling hills with post oak vegetation. The formation is about 100 feet thick in Gonzales County. The Sparta Sand is much thinner south of the Colorado River than it is farther north. Sand bodies within the formation tend to parallel the outcrop band. Numerous faults cross the outcrop.

The Sparta Sand is overlain by Arenosa, Padina, and Silstid soil series.

The Cook Mountain Formation represents the last marine transgression that left abundant fossils in Gonzales County. The Cook Mountain Formation outcrop is 4 to 5 miles wide south of the Guadalupe River, and about 3 miles wide north of the river (5). It is about 200 feet thick, and composed of clay, silt, and minor lenses of sand and sandstone. Complex interbedding of clay, silt, fine sand, occasional limestone, and glauconitic beds has resulted in an intricate soil map pattern.

Alfisols formed over the Cook Mountain Formation are the Kurten, Crockett, and Normangee series. Mollisols include the Benchley and Elmendorf series. Vertisols are represented by Dimebox, Dreyer, and Luling series. The Denhawken series is an Inceptisol.

The Yegua Formation outcrop is 2 to 5 miles wide (5). The surface pattern of the outcrop is significantly affected by mapped and unmapped faults. Its thickness is about 1,000 feet (5). The Yegua Formation in Gonzales County was deposited on deltas and an ancient coastal plain by small to medium-sized streams. Larger deltas and much thicker deposits were formed to the north and to the southwest of Gonzales County.

The Yegua Formation is composed of bentonitic clay, silt, and sand with lignite and silicified wood. Sand comprises 40 to 60 percent of the formation in Gonzales County (15). Bentonite is clay weathered from volcanic ash, especially siliceous ash. Yegua sediments were derived from volcanoes in western Texas and central New Mexico that were active 40 to 30 million years ago. The Yegua Formation also contains thin gypsum beds and disseminated gypsum crystals.

The Edge, Griter, Zack, and Zulch soil series over the Yegua Formation reflect the complex distribution of sand and clay.

Jackson Group

The Caddell Formation is about 100 feet thick, and forms a narrow outcrop with rolling topography. The valley of Peach Creek generally parallels the outcrop band from the northern county line to northwest of the Dilworth community (5). A few fossiliferous and glauconitic beds indicate the Caddell Formation represents a marine transgression over the Yegua Formation delta and coastal plain sediments. However, the transgression was not great enough to provide highly fossiliferous limestone as in the Recklaw and Weches Formations. The Caddell Formation's depositional environment is generally considered to be prodelta (13). The Caddell Formation is dominantly bentonitic clay with a few sandstone beds.

Burlewash and Cadell soil series reflect the predominantly clay content of the Caddell Formation.

The Wellborn Formation is about 100 feet thick and crops out in a narrow, sandy band supporting post oak vegetation. It was deposited as delta-front sediments. This depositional environment was probably part of a change from Caddell Formation prodelta, to Wellborn Formation delta-front, and then to Manning Formation delta-plain (13). Presumably, delta distributary sand bodies are not present. However, sand bodies paralleling the shoreline are common to the southwest (3). The Wellborn Formation is sandier than the underlying and overlying formations.

Soils mapped over the Wellborn Formation are the Arol, Burlewash, Rutersville, Shalba, Shiro, and Singleton series.

The Manning Formation is about 400 feet thick. The outcrop has low relief. Sandier areas are covered by oak hardwoods, and clayey areas by mesquite and grasses. Clays are bentonitic, and silicified fossil wood is common.

The Arol, Bryde, Gillett, Singleton, Shalba, and Rutersville soil series are mapped over the Manning Formation.

The Whitsett Formation is about 200 feet thick. The outcrop forms a low, timbered ridge south of the Guadalupe River. To the north, it forms the lower part of the slope in front of the north-facing Oakville Formation cuesta (5). The Whitsett Formation is sandier than the underlying formations of the Jackson Group. It probably represents alluvial deposits that spread over delta deposits. Sands are tuffaceous and clays are bentonitic.

Soils formed over the Whitsett Formation are predominantly the Arol, Singleton, Shalba, and Bryde series.

The Catahoula Formation is about 100 feet thick at the northern edge of the county and more than 200 feet thick at the southern edge. The outcrop widens correspondingly (5). The outcrop forms gentle slopes below the Oakville Formation cuesta. The Catahoula Formation is characteristically light-colored. Sands are tuffaceous and clays are bentonitic. Except for local concretions and some caliche soils, the Catahoula Formation is noncalcareous in contrast to the overlying Oakville Sandstone.

Soils formed over the Catahoula Formation are the Eloso, Rosenbrock, Greenvine, and Flatonia series.

The Oakville Sandstone is a coarse, well cemented sandstone containing gravel beds. Because of abundant carbonate and opal cement it forms the high ridge along the eastern edge of the county. Prominent exposures can be seen at the roadside park on U.S. Highway 90A near the eastern county line. The Oakville Sandstone records extensive erosion of Upper Cretaceous marine shales and limestones in Central Texas. Cobbles of Austin Chalk, and fragments of reworked fossils, such as large oysters, form a large percentage of Oakville Formation gravel.

Carbengle and Frelsburg soils formed on the Oakville Formation.

Tertiary—Quaternary Deposits

The Willis Formation is mapped along the southeastern county line as outliers over the Catahoula Formation and Oakville Sandstone. These deposits are shown as Pleistocene age on the Geologic Atlas of Texas, Sequin Sheet (5). However, the later Geologic Map of Texas (6) indicates the Willis Formation is Pliocene in age. Many of these deposits are too small to be mapped at the 1:250,000 scale (5), but they significantly affect local soil characteristics.

These relict high gravel deposits, on the flanks of major stream channel valleys and edges of interfluves, are present throughout the county. They were laid down by the present stream network during Pliocene-Pleistocene time when the streams flowed at elevations of 100 to 150 feet above their present elevations. Willis Formation deposits are mostly fluviatile chert, derived from Edwards Group strata in Central Texas, and sand, silt, and clay.

Soils formed on the Willis Formation are the gravelly Axtell, gravelly Burlewash, gravelly Edge, and very gravelly Silvern series.

Quaternary Sediment

Quaternary fluvial sediments, deposited over Tertiary strata, are the youngest geologic strata in the county. These Pleistocene and Holocene age sediments were deposited as alluvium and, in some locations, subsequently reworked by eolian processes. The fluvial and eolian processes occurred while the present topography was being formed. Consequently, these deposits are along the periphery of drainageways throughout the county.

Pleistocene terraces are remnants of flood plains when streams flowed at elevations 25 to 50 feet higher than at present (5). These sediments and their relict terraces are located at intermediate elevations between the Willis Formation and Holocene alluvium.

Soils mapped on Pleistocene terraces are mostly the Chazos, Tabor, and Wilson series.

Younger Holocene alluvium is on flood plains, levees, and lower terraces subject to flooding, along streams. Peach Creek, the San Marcos River, Guadalupe River, and Sandies Creek flood plains are 2 to 5 miles wide, much too wide to have been formed by modern overbank stream flow and sedimentation. They were formed when past flood depths and volumes were much greater than those of the present.

Holocene flood plain soils are the Bosque, Buchel, Degola, Meguin, Tinn, and Waelder series.

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook" (available in local offices of the Natural Resources Conservation Service or on the Internet).

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

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

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

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

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha, alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

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

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hill slope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane. A plane or nearly plane bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

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

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

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

Bottom land. An informal term loosely applied to various portions of a flood plain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche. A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

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

Cement rock. Clayey limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: Clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are compounds making up concretions. See Redoximorphic features.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cutbanks cave (in tables)**.** The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer (in tables)**.** A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained*, and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

En echelon. Said of geologic features that are in an overlapping or staggered arrangement, for example, faults.

Eolian deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: Natural erosion.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.

Escarpment. A relatively and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: Scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Footslope. The concave surface at the base of a hill slope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Commonly, a succession of microlows (microbasins) and microhighs (microknolls) in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

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

Groundwater. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables)**.** Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hill slope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

L horizon.—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hill slopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. See Redoximorphic features.

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

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

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

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Large stones (in tables)**.** Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at ⅓- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

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

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

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

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

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: Abundance—*few, common*, and *many; size—fine, medium*, and *coarse*; and *contrast—faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch)*; medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch)*;* and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Potential Linear Extensibility (PLE). See Linear Extensibility.

Precipitation Effectiveness Index (PE Index). The measure of the long-range effectiveness of precipitation in promoting plant growth for a given location. The formula for calculating PE Index is:

$$\text{P-E Index} = 10 \sum_{n-1}^{12} (\text{P-E index})_n$$

The formula is equal to 10 times the sum of the monthly precipitation-evaporation ratios (monthly precipitation amounts divided by monthly evaporation amounts).

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

Pedon. The smallest volume that can be called "a soil." A pedon is three-dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables)**.** Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables)**.** Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

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

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

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

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   a. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; and
   b. Masses, which are noncemented concentrations of substances within the soil matrix; and
   c. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   a. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; and
   b. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

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

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from groundwater.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.
Saturated hydraulic conductivity (K_{sat}). See Permeability.
Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.
Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.
Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)
Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.
Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.
Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
Shoulder. The convex, erosional surface near the top of a hill slope. A shoulder is a transition from summit to backslope.
Shrink-swell (in tables)**.** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
Side slope (geomorphology). A geomorphic component of hills consisting of a laterally plane area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.
Silica. A combination of silicon and oxygen. The mineral form is called quartz.
Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.
Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.
Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.
Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 1 percent
Very gently sloping	1 to 3 percent
Gently sloping	3 to 5 percent
Moderately sloping	5 to 8 percent
Strongly sloping	8 to 12 percent
Moderately steep	12 to 20 percent
Steep	20 to 45 percent

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables)**.** The slow filling of ponds, resulting from restricted permeability in the soil.

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

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

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

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

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

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless soils are either single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

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

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. See Underlying material.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hill slope. It has a nearly level (plane or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

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

Thin layer (in tables)**.** Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hill slope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hill slope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff. A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hill slope continuum.

Underlying material. The part of the soil below the solum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Gonzales, TX)

Month	Temperature (Degrees F)					Precipitation (Inches)				
				2 years in 10 will have				2 years in 10 will have		
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than	Minimum temperature lower than	Average number of growing degree days*	Average	Less than	More than	Average number of days with 0.10 inch or more
January	61.4	38.9	50.2	82	19	132	2.36	0.68	4.01	4
February	66.0	42.4	54.2	87	21	186	2.08	0.63	3.37	4
March	73.3	49.9	61.6	92	28	378	2.23	1.00	3.47	3
April	79.6	56.3	67.9	94	36	539	3.04	0.74	4.90	3
May	85.5	65.1	75.3	96	48	784	5.43	2.22	8.58	5
June	91.2	70.9	81.0	101	58	930	4.24	1.28	6.78	5
July	95.0	72.9	84.0	102	67	1,053	1.60	0.39	2.80	3
August	95.3	72.4	83.8	103	65	1,048	2.68	0.55	4.03	3
September	90.4	67.7	79.1	101	49	872	3.20	1.43	4.93	4
October	82.3	58.2	70.2	95	38	628	3.87	0.97	5.72	4
November	71.6	48.4	60.0	88	28	325	2.84	1.18	4.32	4
December	63.6	40.8	52.2	83	19	161	2.45	0.93	3.56	4
Yearly:										
Average	79.6	57.0	68.3	---	---	---	---	---	---	---
Extreme	111	4	---	105	16	---	---	---	---	---
Total	---	---	---	---	---	7,037	36.02	27.68	44.30	46

*A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minumum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area Threshold: 50.0 degrees F)

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Gonzales, Texas)

Probability	Temperature: 24 degrees F or lower	Temperature: 28 degrees F or lower	Temperature: 32 degrees F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	February 19	March 4	March 21
2 year in 10 later than--	February 8	February 22	March 13
5 year in 10 later than--	January 14	February 1	February 27
First freezing temperature in fall:			
1 yr in 10 earlier than--	December 3	November 18	November 7
2 yr in 10 earlier than--	December 12	November 26	November 15
5 yr in 10 earlier than--	January 2	December 12	November 30

Table 3.--Growing Season

(Recorded for the period 1971-2000 at Gonzales, Texas)

Probability	Daily Minimum Temperature: Number of days greater than 24 degrees F	Daily Minimum Temperature: Number of days greater than 28 degrees F	Daily Minimum Temperature: Number of days greater than 32 degrees F
9 years in 10	306	277	243
8 years in 10	321	290	254
5 years in 10	359	315	276
2 years in 10	> 365	344	298
1 year in 10	> 365	> 365	310

Table 4.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Nixon, Texas)

Month	Temperature (Degrees F)					Precipitation (Inches)				
				2 years in 10 will have				2 years in 10 will have		
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than	Minimum temperature lower than	Average number of growing degree days*	Average	Less than	More than	Average number of days with 0.10 inch or more
January	63.6	41.1	52.4	83	19	167	2.09	0.73	3.44	4
February	68.0	44.6	56.3	87	22	222	2.31	0.66	3.84	3
March	75.1	51.5	63.3	92	29	420	2.03	0.83	3.21	3
April	80.8	57.7	69.2	94	37	574	2.87	0.68	4.97	3
May	86.3	65.3	75.8	96	48	790	4.95	1.86	7.80	5
June	91.6	70.7	81.1	101	59	933	4.05	1.22	6.51	4
July	94.9	72.4	83.6	102	66	1,041	1.79	0.31	3.22	3
August	95.5	71.9	83.7	103	64	1,043	3.03	0.57	5.01	3
September	90.9	67.9	79.4	101	49	874	3.56	1.32	5.60	4
October	83.1	59.3	71.2	95	38	656	3.51	1.17	5.38	4
November	72.7	50.3	61.5	88	28	361	2.63	0.92	4.15	4
December	65.1	42.8	54.0	83	19	193	2.12	0.62	2.88	3
Yearly:										
Average	80.6	58.0	69.3	---	---	---	---	---	---	---
Extreme	112	5	---	105	16	---	---	---	---	---
Total	---	---	---	---	---	7,274	34.92	26.18	41.66	43

*A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minumum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (Threshold: 50.0 degrees F)

Table 5.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Nixon, Texas)

Probability	Temperature: 24 degrees F or lower	28 degrees F or lower	32 degrees F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	February 17	March 5	March 18
2 year in 10 later than--	February 7	February 23	March 9
5 year in 10 later than--	January 13	February 3	February 21
First freezing temperature in fall:			
1 yr in 10 earlier than--	December 6	November 19	November 10
2 yr in 10 earlier than--	December 17	November 29	November 17
5 yr in 10 earlier than--	January 21	December 19	December 2

Table 6.--Growing Season

(Recorded for the period 1971-2000 at Nixon, Texas)

Probability	Daily Minimum Temperature: Number of days greater than 24 degrees F	Number of days greater than 28 degrees F	Number of days greater than 32 degrees F
9 years in 10	310	275	255
8 years in 10	324	291	266
5 years in 10	> 365	322	287
2 years in 10	> 365	> 365	307
1 year in 10	> 365	> 365	318

Table 7.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AmB	Alum loamy fine sand, 0 to 3 percent slopes	2,768	0.4
ApC	Arenosa fine sand, 1 to 5 percent slopes	2,085	0.3
ArA	Arol fine sandy loam, 0 to 1 percent slopes	2,555	0.4
ArB	Arol fine sandy loam, 1 to 3 percent slopes	17,212	2.5
AxB	Axtell gravelly fine sandy loam, 1 to 3 percent slopes	1,421	0.2
AxC	Axtell gravelly fine sandy loam, 3 to 5 percent slopes	970	0.1
AxE	Axtell gravelly fine sandy loam, 5 to 12 percent slopes	1,039	0.2
BnB	Benchley clay loam, 1 to 3 percent slopes	17,190	2.5
BoA	Bosque clay loam, 0 to 1 percent slopes, frequently flooded	4,348	0.6
BpA	Bosque-Tinn complex, 0 to 1 percent slopes, frequently flooded	1,533	0.2
BrA	Branyon clay, 0 to 1 percent slopes	3,100	0.5
BtB	Bryde fine sandy loam, 1 to 3 percent slopes	8,794	1.3
BuA	Buchel clay, 0 to 1 percent slopes, occasionally flooded	5,113	0.7
BvA	Buchel clay, 0 to 1 percent slopes, frequently flooded	3,848	0.6
BwB	Burlewash fine sandy loam, 1 to 3 percent slopes	5,473	0.8
BwC2	Burlewash fine sandy loam, 3 to 5 percent slopes, eroded	8,131	1.2
BwE	Burlewash gravelly fine sandy loam, 5 to 12 percent slopes	1,248	0.2
CaB	Cadell fine sandy loam, 1 to 3 percent slopes	4,141	0.6
CbB	Carbengle loam, 1 to 3 percent slopes	3,098	0.5
CbC	Carbengle loam, 3 to 5 percent slopes	5,075	0.7
CbC2	Carbengle loam, 3 to 5 percent slopes, eroded	923	0.1
CbE	Carbengle loam, 5 to 12 percent slopes	2,314	0.3
ChA	Chazos loamy fine sand, 0 to 1 percent slopes	7,640	1.1
ChB	Chazos loamy fine sand, 1 to 3 percent slopes	12,620	1.8
CnB	Conquista clay, 1 to 3 percent slopes	245	*
CnG	Conquista clay, 20 to 40 percent slopes	133	*
CoA	Cost loamy fine sand, 0 to 1 percent slopes, occasionally flooded	4,929	0.7
CpB	Coy clay loam, 1 to 3 percent slopes	1,386	0.2
CrB	Crockett fine sandy loam, 1 to 3 percent slopes	16,352	2.4
CrC2	Crockett fine sandy loam, 2 to 5 percent slopes, eroded	8,497	1.2
CsB	Crockett gravelly fine sandy loam, 1 to 3 percent slopes	1,407	0.2
CsC2	Crockett gravelly fine sandy loam, 2 to 5 percent slopes, eroded	1,489	0.2
CuB	Cuero fine sandy loam, 1 to 3 percent slopes	1,487	0.2
DeA	Degola loam, 0 to 1 percent slopes, occasionally flooded	2,671	0.4
DfA	Degola clay loam, 0 to 1 percent slopes, frequently flooded	30,634	4.5
DmB	Dimebox clay, 1 to 3 percent slopes	4,836	0.7
DyC2	Dreyer clay, 3 to 5 percent slopes, eroded	5,556	0.8
DyE	Dreyer clay, 5 to 12 percent slopes	2,880	0.4
EcB	Ecleto sandy clay loam, 1 to 3 percent slopes	1,037	0.2
EcC	Ecleto sandy clay loam, 3 to 5 percent slopes	403	*
EdB	Edge fine sandy loam, 1 to 3 percent slopes	30,790	4.5
EdC2	Edge fine sandy loam, 2 to 5 percent slopes, eroded	23,028	3.4
EdD3	Edge fine sandy loam, 3 to 8 percent slopes, severely eroded	638	*
EdE2	Edge fine sandy loam, 5 to 12 percent slopes, eroded	1,349	0.2
EgC	Edge gravelly fine sandy loam, 2 to 5 percent slopes	6,331	0.9
EgE	Edge gravelly fine sandy loam, 5 to 12 percent slopes	2,089	0.3
EkB	Elmendorf-Denhawken complex, 1 to 3 percent slopes	13,917	2.0
EkC	Elmendorf-Denhawken complex, 3 to 5 percent slopes	1,910	0.3
EsB	Eloso clay, 1 to 3 percent slopes	2,186	0.3
FnB	Flatonia sandy clay loam, 1 to 3 percent slopes	13,673	2.0
FsB	Frelsburg clay, 1 to 3 percent slopes	2,187	0.3
FsC	Frelsburg clay, 3 to 5 percent slopes	2,167	0.3
GfA	Ganado clay, 0 to 1 percent slopes, frequently flooded	6,707	1.0
GhC	Gholson loamy fine sand, 1 to 5 percent slopes	7,136	1.0
GkC	Gillett fine sandy loam, 1 to 5 percent slopes	11,651	1.7
GkF	Gillett fine sandy loam, 8 to 20 percent slopes, very stony	419	*
GP	Pits	835	0.1
GrB	Greenvine clay, 1 to 3 percent slopes	6,384	0.9
GrC	Greenvine clay, 3 to 5 percent slopes	6,395	0.9
GtB	Griter fine sandy loam, 1 to 3 percent slopes	8,374	1.2

See footnote at end of table.

Table 7.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
GtC2	Griter fine sandy loam, 2 to 5 percent slopes, eroded	4,606	0.7
GU	Gullied land	512	*
ImA	Imogene fine sandy loam, 0 to 1 percent slopes	2,202	0.3
JsC	Jedd gravelly fine sandy loam, 3 to 5 percent slopes	6,553	1.0
JsE	Jedd gravelly fine sandy loam, 5 to 15 percent slopes	8,521	1.2
KuB	Kurten fine sandy loam, 2 to 5 percent slopes	7,687	1.1
LeB	Leming loamy fine sand, 0 to 3 percent slopes	4,585	0.7
LkA	Luckenbach sandy clay loam, 0 to 1 percent slopes	1,943	0.3
LkB	Luckenbach sandy clay loam, 1 to 3 percent slopes	4,928	0.7
LuB	Luling clay, 1 to 3 percent slopes	19,462	2.8
LuC	Luling clay, 3 to 5 percent slopes	10,042	1.5
LuC2	Luling clay, 2 to 5 percent slopes, eroded	2,619	0.4
MaA	Mabank fine sandy loam, 0 to 1 percent slopes	4,012	0.6
MeA	Meguin silty clay loam, 0 to 1 percent slopes, occasionally flooded	16,327	2.4
MfA	Meguin silty clay loam, 0 to 1 percent slopes, frequently flooded	13,467	2.0
MoB	Monteola clay, 1 to 3 percent slopes	1,208	0.2
MoC	Monteola clay, 3 to 5 percent slopes	584	*
NaA	Navasota clay, 0 to 1 percent slopes, frequently flooded	361	*
NmB	Normangee sandy clay loam, 1 to 3 percent slopes	5,019	0.7
NmC	Normangee sandy clay loam, 3 to 5 percent slopes	4,205	0.6
NuC	Nusil loamy fine sand, 0 to 5 percent slopes	4,835	0.7
PaC	Padina loamy fine sand, 0 to 5 percent slopes	12,405	1.8
PbA	Papalote loamy fine sand, 0 to 1 percent slopes	3,082	0.5
PbB	Papalote fine sandy loam, 1 to 3 percent slopes	1,589	0.2
PkB	Pavelek clay, 0 to 3 percent slopes	974	0.1
Px	Pits		
RhC	Rhymes fine sand, 0 to 5 percent slopes	2,243	0.3
RoB	Rosanky fine sandy loam, 1 to 3 percent slopes	22,839	3.3
RoC2	Rosanky fine sandy loam, 3 to 5 slopes, eroded	14,492	2.1
RsB	Rosenbrock clay, 1 to 3 percent slopes	1,420	0.2
RvA	Rutersville loamy fine sand, 0 to 1 percent slopes	7,736	1.1
SaD	Sarnosa fine sandy loam, 5 to 8 percent slopes	681	*
ScC	Schattel clay loam, 2 to 5 percent slopes, nonsaline	792	0.1
ShC	Shalba fine sandy loam, 1 to 5 percent slopes	4,972	0.7
SnC	Shiner fine sandy loam, 3 to 5 percent slopes	2,597	0.4
SnE	Shiner fine sandy loam, 5 to 12 percent slopes	2,507	0.4
SoC	Shiro loamy fine sand, 1 to 5 percent slopes	4,479	0.7
SsC	Silstid loamy fine sand, 1 to 5 slopes	22,293	3.3
SvD	Silvern very gravelly loamy sand, 1 to 8 percent slopes	1,952	0.3
SwA	Singleton fine sandy loam, 0 to 1 percent slopes	844	0.1
SwC	Singleton fine sandy loam, 1 to 5 percent slopes	16,030	2.3
SxB	Styx loamy fine sand, 0 to 2 percent slopes	4,148	0.6
SyC	Sunev loam, 3 to 5 percent slopes	2,250	0.3
SyE	Sunev loam, 8 to 15 percent slopes	2,041	0.3
TbA	Tabor fine sandy loam, 0 to 1 percent slopes	19,814	2.9
TbB	Tabor fine sandy loam, 1 to 3 percent slopes	10,189	1.5
TnA	Tinn clay, 0 to 1 percent slopes, occasionally flooded	1,149	0.2
ToA	Tinn clay, 0 to 1 percent slopes, frequently flooded	4,008	0.6
TrB	Tordia clay, 1 to 3 percent slopes	642	*
TtC	Tremona loamy fine sand, 1 to 5 percent slopes	4,629	0.7
W	Water	3,228	0.5
WaA	Waelder loam, 0 to 1 percent slopes, occasionally flooded	4,132	0.6
WeA	Waelder loam, 0 to 1 percent slopes, frequently flooded	8,652	1.3
WsC	Weesatche fine sandy loam, 2 to 5 percent slopes	4,439	0.6
WwA	Wilson clay loam, 0 to 1 percent slopes	6,355	0.9
ZkB	Zack fine sandy loam, 1 to 3 percent slopes	3,398	0.5
ZuB	Zulch fine sandy loam, 1 to 3 percent slopes	2,939	0.4
	Total	684,365	100.0

* Less than 0.1 percent.

Table 8.--Prime Farmland

(Only the soils considered prime or important farmland are listed. Urban or built-up areas of the soils listed are not considered prime or important farmland. If a soil is prime or important farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map Symbol	Map unit name
AmB	Alum loamy fine sand, 0 to 3 percent slopes
BnB	Benchley clay loam, 1 to 3 percent slopes
BrA	Branyon clay, 0 to 1 percent slopes
BtB	Bryde fine sandy loam, 1 to 3 percent slopes
BuA	Buchel clay, 0 to 1 percent slopes, occasionally flooded
CaB	Cadell fine sandy loam, 1 to 3 percent slopes
CbB	Carbengle loam, 1 to 3 percent slopes
CbC	Carbengle loam, 3 to 5 percent slopes
ChA	Chazos loamy fine sand, 0 to 1 percent slopes
ChB	Chazos loamy fine sand, 1 to 3 percent slopes
CpB	Coy clay loam, 1 to 3 percent slopes
CuB	Cuero fine sandy loam, 1 to 3 percent slopes
DeA	Degola loam, 0 to 1 percent slopes, occasionally flooded
DmB	Dimebox clay, 1 to 3 percent slopes
EsB	Eloso clay, 1 to 3 percent slopes
FnB	Flatonia sandy clay loam, 1 to 3 percent slopes
FsB	Frelsburg clay, 1 to 3 percent slopes
FsC	Frelsburg clay, 3 to 5 percent slopes
GhC	Gholson loamy fine sand, 1 to 5 percent slopes
GrB	Greenvine clay, 1 to 3 percent slopes
GrC	Greenvine clay, 3 to 5 percent slopes
GtB	Griter fine sandy loam, 1 to 3 percent slopes
JsC	Jedd gravelly fine sandy loam, 3 to 5 percent slopes
LkA	Luckenbach sandy clay loam, 0 to 1 percent slopes
LkB	Luckenbach sandy clay loam, 1 to 3 percent slopes
LuB	Luling clay, 1 to 3 percent slopes
LuC	Luling clay, 3 to 5 percent slopes
MeA	Meguin silty clay loam, 0 to 1 percent slopes, occasionally flooded
MoB	Monteola clay, 1 to 3 percent slopes
MoC	Monteola clay, 3 to 5 percent slopes
PbA	Papalote loamy fine sand, 0 to 1 percent slopes
PbB	Papalote fine sandy loam, 1 to 3 percent slopes
RoB	Rosanky fine sandy loam, 1 to 3 percent slopes
RsB	Rosenbrock clay, 1 to 3 percent slopes
RvA	Rutersville loamy fine sand, 0 to 1 percent slopes
SoC	Shiro loamy fine sand, 1 to 5 percent slopes
SyC	Sunev loam, 3 to 5 percent slopes
TnA	Tinn clay, 0 to 1 percent slopes, occasionally flooded
TrB	Tordia clay, 1 to 3 percent slopes
WaA	Waelder loam, 0 to 1 percent slopes, occasionally flooded
WsC	Weesatche fine sandy loam, 2 to 5 percent slopes

Table 9.--Irrigated and Nonirrigated Yields by Map Unit

(Yields in the "N" columns are for nonirrigated areas; those in the "I" columns are for irrigated areas. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Map symbol and soil name	Land capability N	Land capability I	Common bermudagrass N	Common bermudagrass I	Corn N	Corn I	Grain sorghum N	Grain sorghum I	Improved bermudagrass N	Improved bermudagrass I	Peanuts N	Peanuts I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
AmB:			---	---	50.00	---	32.00	---	---	---	950.00	---
Alum	3e	---										
ApC:			---	---	---	---	---	---	3.00	---	---	---
Arenosa	4s	---										
ArA:			2.00	---	---	---	---	---	4.00	---	---	---
Arol	3s	---										
ArB:			2.00	---	---	---	---	---	4.00	---	---	---
Arol	3e	---										
AxB:			---	---	50.00	---	40.00	---	5.00	---	---	---
Axtell	3e	---										
AxC:			---	---	---	---	---	---	4.00	---	---	---
Axtell	4e	---										
AxE:			---	---	---	---	---	---	---	---	---	---
Axtell	6e	---										
BnB:			7.00	---	90.00	---	85.00	---	8.00	---	---	---
Benchley	2e	---										
BoA:			---	---	---	---	---	---	7.00	---	---	---
Bosque	5w	---										
BpA:			---	---	---	---	---	---	7.00	---	---	---
Bosque	5w	---										
Tinn	5w	---										
BrA:			---	---	100.00	---	100.00	---	7.50	---	---	---
Branyon	2w	---										
BtB:			---	---	50.00	---	40.00	---	3.00	---	---	---
Bryde	3e	---										
BuA:			---	---	60.00	---	55.00	---	5.50	---	---	---
Buchel	3w	---										

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Common bermudagrass		Corn		Grain sorghum		Improved bermudagrass		Peanuts	
	N	I	N	I	N	I	N	I	N	I	N	I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
BvA: Buchel	5w	---	---	---	---	---	---	---	5.00	---	---	---
BwB: Burlewash	4e	---	2.00	---	---	---	---	---	2.00	---	---	---
BwC2: Burlewash, eroded	4e	---	1.00	---	---	---	---	---	---	---	---	---
BwE: Burlewash	6e	---	1.00	---	---	---	---	---	2.00	---	---	---
CaB: Cadell	3e	---	4.50	---	---	---	---	---	5.50	---	---	---
CbB: Carbengle	2e	---	---	---	60.00	---	---	---	7.00	---	---	---
CbC: Carbengle	3e	---	---	---	55.00	---	---	---	6.00	---	---	---
CbC2: Carbengle, eroded	4e	---	---	---	50.00	---	---	---	4.00	---	---	---
CbE: Carbengle	6e	---	---	---	---	---	---	---	---	---	---	---
ChA: Chazos	2w	---	5.00	---	65.00	---	45.00	---	7.00	---	1,300.00	---
ChB: Chazos	2e	---	5.00	---	65.00	---	45.00	---	7.00	---	1,300.00	---
CnB: Conquista	4e	---	---	---	---	---	---	---	4.00	---	---	---
CnG: Conquista	7e	---	---	---	---	---	---	---	2.00	---	---	---
CoA: Cost	6s	---	---	---	---	---	---	---	---	---	---	---
CpB: Coy	2e	2e	---	---	55.00	100.00	60.00	100.00	5.00	12.00	---	---

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Common bermudagrass		Corn		Grain sorghum		Improved bermudagrass		Peanuts	
	N	I	N	I	N	I	N	I	N	I	N	I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
CrB: Crockett-----------	3e	---	4.00	---	55.00	---	55.00	---	6.50	---	---	---
CrC2: Crockett, eroded---	4e	---	3.50	---	---	---	45.00	---	5.00	---	---	---
CsB: Crockett-----------	3e	---	4.00	---	55.00	---	55.00	---	6.50	---	---	---
CsC2: Crockett, eroded---	4e	---	3.50	---	---	---	45.00	---	5.00	---	---	---
CuB: Cuero--------------	2e	---	---	---	65.00	---	50.00	---	7.00	---	---	---
DeA: Degola-------------	2w	---	---	---	60.00	---	70.00	---	7.00	---	---	---
DfA: Degola-------------	5w	---	---	---	---	---	---	---	7.00	---	---	---
DmB: Dimebox------------	2e	---	5.00	---	100.00	---	85.00	---	6.00	---	---	---
DyC2: Dreyer, eroded-----	4e	---	---	---	50.00	---	---	---	4.50	---	---	---
DyE: Dreyer-------------	6e	---	---	---	---	---	---	---	4.00	---	---	---
EcB: Ecleto-------------	3e	---	---	---	50.00	---	30.00	---	2.50	---	---	---
EcC: Ecleto-------------	4e	---	---	---	50.00	---	25.00	---	2.00	---	---	---
EdB: Edge---------------	4e	---	4.00	---	---	---	35.00	---	5.50	---	---	---
EdC2: Edge, eroded-------	4e	---	3.50	---	---	---	25.00	---	5.00	---	---	---

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability N	Land capability I	Common bermudagrass N	Common bermudagrass I	Corn N	Corn I	Grain sorghum N	Grain sorghum I	Improved bermudagrass N	Improved bermudagrass I	Peanuts N	Peanuts I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
EdD3:			2.50	---	---	---	---	---	3.50	---	---	---
Edge, severely eroded------------	6e	---										
EdE2:			---	---	55.00	---	35.00	---	5.50	---	---	---
Edge----------------	4e	---										
EgC:			---	---	---	---	---	---	---	---	---	---
Edge----------------	4e	---										
EgE:			---	---	---	---	---	---	4.00	---	---	---
Edge----------------	6e	---										
EkB:			---	---	55.00	100.00	50.00	115.00	3.50	---	---	---
Elmendorf----------	2e	2e										
Denhawken----------	3e	3e										
EkC:			---	---	50.00	100.00	40.00	90.00	3.00	---	---	---
Elmendorf----------	3e	3e										
Denhawken----------	3e	3e										
EsB:			---	---	60.00	---	30.00	---	2.50	---	---	---
Eloso--------------	3e	---										
FnB:			---	---	60.00	---	60.00	---	7.00	---	---	---
Flatonia-----------	2e	---										
FsB:			---	---	55.00	---	70.00	---	7.00	---	---	---
Frelsburg----------	2e	---										
FsC:			---	---	55.00	---	55.00	---	7.00	---	---	---
Frelsburg----------	3e	---										
GfA:			---	---	---	---	---	---	8.00	---	---	---
Ganado-------------	5w	---										
GhC:			---	---	65.00	---	55.00	---	6.00	---	1,400.00	---
Gholson------------	3e	---										
GkC:			---	---	50.00	---	35.00	---	2.50	---	---	---
Gillett------------	3e	---										

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability N	Land capability I	Common bermudagrass N	Common bermudagrass I	Corn N	Corn I	Grain sorghum N	Grain sorghum I	Improved bermudagrass N	Improved bermudagrass I	Peanuts N	Peanuts I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
GkF: Gillett	7s	---	---	---	---	---	---	---	---	---	---	---
GP: Pits	8s	---	---	---	---	---	---	---	---	---	---	---
GrB: Greenvine	2e	---	---	---	50.00	---	80.00	---	3.00	---	---	---
GrC: Greenvine	3e	---	---	---	50.00	---	55.00	---	2.00	---	---	---
GtB: Griter	3e	3e	---	---	55.00	100.00	30.00	75.00	3.00	12.00	800.00	3,000.00
GtC2: Griter, eroded	4e	4e	---	---	50.00	---	25.00	70.00	3.00	10.00	700.00	---
GU: Gullied land	7e	---	---	---	---	---	---	---	---	---	---	---
ImA: Imogene	4s	3s	---	---	---	---	25.00	60.00	---	---	---	---
JsC: Jedd	3e	---	6.00	---	60.00	---	---	---	7.00	---	---	---
JsE: Jedd	6e	---	5.00	---	---	---	---	---	6.00	---	---	---
KuB: Kurten	4e	---	5.00	---	50.00	---	40.00	---	5.00	---	---	---
LeB: Leming	3e	---	---	---	---	---	65.00	---	---	---	---	---
LkA: Luckenbach	1	---	---	---	---	---	63.00	---	5.00	---	---	---
LkB: Luckenbach	2e	---	---	---	---	---	54.00	---	5.00	---	---	---

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability N	Land capability I	Common bermudagrass N	Common bermudagrass I	Corn N	Corn I	Grain sorghum N	Grain sorghum I	Improved bermudagrass N	Improved bermudagrass I	Peanuts N	Peanuts I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
LuB: Luling	2e	---	---	---	90.00	---	85.00	---	4.50	---	---	---
LuC: Luling	3e	---	---	---	70.00	---	70.00	---	3.50	---	---	---
LuC2: Luling, eroded	4e	---	---	---	---	---	---	---	3.50	---	---	---
MaA: Mabank	3w	---	---	---	55.00	---	55.00	---	6.00	---	---	---
MeA: Meguin	2w	---	---	---	60.00	---	80.00	---	6.50	---	---	---
MfA: Meguin	5w	---	---	---	---	---	---	---	6.50	---	---	---
MoB: Monteola	3e	3e	---	---	55.00	100.00	50.00	110.00	3.00	12.00	---	---
MoC: Monteola	3e	---	---	---	55.00	---	40.00	---	3.00	---	---	---
NaA: Navasota	5w	---	2.00	---	---	---	---	---	2.00	---	---	---
NmB: Normangee	3e	---	---	---	50.00	---	50.00	---	8.00	---	---	---
NmC: Normangee	4e	---	---	---	50.00	---	50.00	---	8.00	---	---	---
NuC: Nusil	4e	3e	---	---	---	---	---	---	3.00	12.00	1,000.00	3,000.00
PaC: Padina	3e	---	---	---	---	---	---	---	7.00	---	1,000.00	---
PbA: Papalote	3e	---	---	---	60.00	---	40.00	---	5.00	---	---	---
PbB: Papalote	2e	---	---	---	65.00	---	40.00	---	5.00	---	---	---

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Common bermudagrass		Corn		Grain sorghum		Improved bermudagrass		Peanuts	
	N	I	N	I	N	I	N	I	N	I	N	I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
PkB:			---	---	50.00	---	30.00	---	2.50	---	---	---
Pavelek------------	3e	---										
RhC:			---	---	---	---	---	---	3.00	10.00	1,000.00	2,800.00
Rhymes-------------	6e	4e										
RoB:			6.00	---	65.00	---	50.00	---	7.00	---	---	---
Rosanky------------	2e	---										
RoC2:			5.00	---	35.00	---	35.00	---	6.00	---	---	---
Rosanky, eroded----	4e	---										
RsB:			---	---	75.00	---	65.00	---	5.00	---	---	---
Rosenbrock---------	2e	---										
RvA:			---	---	55.00	---	70.00	---	7.50	---	---	---
Rutersville--------	2w	---										
SaD:			---	---	55.00	---	45.00	---	5.00	---	---	---
Sarnosa------------	4e	---										
ScC:			---	---	---	---	---	---	2.00	---	---	---
Schattel-----------	4e	---										
ShC:			3.00	---	---	---	---	---	4.00	---	---	---
Shalba-------------	4s	---										
SnC:			---	---	---	---	25.00	---	2.50	---	---	---
Shiner-------------	4e	---										
SnE:			---	---	---	---	---	---	2.00	---	---	---
Shiner-------------	6e	---										
SoC:			4.00	---	50.00	---	---	---	5.00	---	---	---
Shiro--------------	3e	---										
SsC:			---	---	---	---	30.00	---	7.00	---	---	---
Silstid------------	3e	---										
SvD:			---	---	---	---	---	---	3.00	---	---	---
Silvern------------	6s	---										
SwA:			3.00	---	---	---	---	---	5.00	---	---	---
Singleton----------	3w	---										

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Common bermudagrass		Corn		Grain sorghum		Improved bermudagrass		Peanuts	
	N	I	N	I	N	I	N	I	N	I	N	I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
SwC: Singleton	4e	---	3.00	---	---	---	---	---	5.00	---	---	---
SxB: Styx	3e	---	---	---	65.00	---	65.00	---	7.50	---	---	---
SyC: Sunev	3e	---	---	---	55.00	---	35.00	---	2.00	---	---	---
SyE: Sunev	6e	---	---	---	---	---	---	---	---	---	---	---
TbA: Tabor	3s	---	---	---	---	---	---	---	7.00	---	---	---
TbB: Tabor	3e	---	---	---	---	---	---	---	7.00	---	---	---
TnA: Tinn	2w	---	---	---	90.00	---	90.00	---	8.00	---	---	---
ToA: Tinn	5w	---	---	---	---	---	---	---	8.00	---	---	---
TrB: Tordia	3e	2e	---	---	50.00	100.00	60.00	95.00	6.00	10.00	---	---
TtC: Tremona	3e	---	5.00	---	---	---	45.00	---	7.00	---	1,200.00	---
W: Water	---	---	---	---	---	---	---	---	---	---	---	---
WaA: Waelder	2w	---	---	---	50.00	---	60.00	---	5.00	---	---	---
WeA: Waelder	4w	---	---	---	---	---	---	---	6.00	---	---	---
WsC: Weesatche	3e	---	---	---	55.00	---	50.00	---	5.50	---	---	---
WwA: Wilson	3w	---	---	---	60.00	---	55.00	---	6.00	---	---	---

Table 9.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Common bermudagrass		Corn		Grain sorghum		Improved bermudagrass		Peanuts	
	N	I	N	I	N	I	N	I	N	I	N	I
			AUM	AUM	Bu	Bu	Bu	Bu	AUM	AUM	Lbs	Lbs
ZkB:			1.00	---	---	---	---	---	3.00	---	---	---
Zack	3s	---										
ZuB:			---	---	50.00	---	---	---	4.00	---	---	---
Zulch	3e	---										

Table 10.--Rangeland Productivity

(Only the soils that support rangeland vegetation suitable for grazing are rated.)

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
AmB:				
Alum	Loamy Sand PE 31-44	4,500	3,500	2,000
ApC:				
Arenosa	Very Deep Sand PE 48-68	3,500	2,500	1,500
ArA:				
Arol	Claypan Savannah PE 48-68	5,500	4,500	2,500
ArB:				
Arol	Claypan Savannah PE 48-68	5,500	4,500	2,500
AxB:				
Axtell	Claypan Savannah PE 48-68	5,000	3,500	2,500
AxC:				
Axtell	Claypan Savannah PE 48-68	5,000	3,500	2,500
AxE:				
Axtell	Claypan Savannah PE 48-68	5,000	3,500	2,500
BnB:				
Benchley	Clay Loam PE 44-64	6,000	5,000	3,200
BoA:				
Bosque	Loamy Bottomland PE 44-64	6,500	5,000	3,500
BpA:				
Bosque	Loamy Bottomland PE 44-64	6,500	5,000	3,500
Tinn	Clayey Bottomland PE 44-64	7,000	6,000	4,000
BrA:				
Branyon	Blackland PE 44-64	7,000	5,500	3,500
BtB:				
Bryde	Tight Sandy Loam PE 31-44	4,800	3,000	2,000
BuA:				
Buchel	Clayey Bottomland PE 19-44	7,500	6,500	5,000
BvA:				
Buchel	Clayey Bottomland PE 19-44	7,500	6,500	5,000
BwB:				
Burlewash	Claypan Savannah PE 48-68	4,500	3,000	2,000
BwC2:				
Burlewash, eroded	Claypan Savannah PE 48-68	4,500	3,000	2,000
BwE:				
Burlewash	Claypan Savannah PE 48-68	5,000	3,800	2,800
CaB:				
Cadell	Claypan Prairie PE 44 - 64	4,000	3,000	2,500

Table 10.--Rangeland Productivity--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
CbB:				
Carbengle	Clay Loam PE 44-64	5,500	4,000	2,500
CbC:				
Carbengle	Clay Loam PE 44-64	5,500	4,000	2,500
CbC2:				
Carbengle, eroded	Clay Loam PE 44-64	5,500	4,000	2,500
CbE:				
Carbengle	Clay Loam PE 44-64	5,500	4,000	2,500
ChA:				
Chazos	Sandy Loam PE 48-68	5,500	4,500	3,000
ChB:				
Chazos	Sandy Loam PE 48-68	5,500	4,500	3,000
CnB:				
Conquista	---	---	---	---
CnG:				
Conquista	---	---	---	---
CoA:				
Cost	Salty Prairie PE 25-44	3,000	2,500	2,000
CpB:				
Coy	Rolling Blackland PE 31-44	4,000	3,500	2,500
CrB:				
Crockett	Claypan Prairie PE 44-64	6,000	5,000	3,000
CrC2:				
Crockett, eroded	Claypan Prairie PE 44-64	6,000	5,000	3,000
CsB:				
Crockett	Claypan Prairie PE 44-64	6,000	5,000	3,000
CsC2:				
Crockett, eroded	Claypan Prairie PE 44-64	6,000	5,000	3,000
CuB:				
Cuero	Clay Loam PE 44-64	6,500	5,000	3,000
DeA:				
Degola	Loamy Bottomland PE 31-44	7,500	6,000	4,000
DfA:				
Degola	Loamy Bottomland PE 31-44	7,500	6,000	4,000
DmB:				
Dimebox	Blackland PE 44-64	7,000	6,000	4,500
DyC2:				
Dreyer, eroded	Eroded Blackland PE 44-64	4,500	3,500	2,500
DyE:				
Dreyer	Eroded Blackland PE 44-64	4,500	3,500	2,500

Table 10.--Rangeland Productivity--Continued

Map symbol and soil name	Ecological site	Total dry-weight production Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
EcB:				
Ecleto	Shallow PE 31-44	2,800	2,000	1,000
EcC:				
Ecleto	Shallow PE 31-44	2,800	2,000	1,000
EdB:				
Edge	Claypan Savannah PE 48-68	5,000	3,500	2,500
EdC2:				
Edge, eroded	Claypan Savannah PE 48-68	5,000	3,500	2,500
EdD3:				
Edge, severely eroded	Claypan Savannah PE 48-68	5,000	3,500	2,500
EdE2:				
Edge	Claypan Savannah PE 48-68	5,000	3,500	2,500
EgC:				
Edge	Claypan Savannah PE 48-68	5,000	3,500	2,500
EgE:				
Edge	Claypan Savannah PE 48-68	5,000	3,500	2,500
EkB:				
Elmendorf	Blackland PE 31-44	4,000	3,500	2,500
Denhawken	Blackland PE 31-44	4,000	3,500	2,500
EkC:				
Elmendorf	Blackland PE 31-44	4,000	3,500	2,500
Denhawken	Blackland PE 31-44	4,000	3,500	2,500
EsB:				
Eloso	Rolling Blackland PE 31-44	4,200	3,200	2,000
FnB:				
Flatonia	Clay Loam PE 44-64	6,000	4,500	3,000
FsB:				
Frelsburg	Blackland PE 44-64	7,500	6,000	4,500
FsC:				
Frelsburg	Blackland PE 44-64	7,500	6,000	4,500
GfA:				
Ganado	Clayey Bottomland PE 44-64	8,000	6,500	5,000
GhC:				
Gholson	Sandy Loam PE 48-68	5,500	4,500	3,000
GkC:				
Gillett	Tight Sandy Loam PE 19-31	4,800	3,000	2,000
GkF:				
Gillett	Tight Sandy Loam PE 19-31	3,500	2,000	1,500
GP:				
Pits	---	---	---	---

Table 10.--Rangeland Productivity--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
GrB:				
Greenvine	Blackland PE 44-64	7,000	5,000	3,000
GrC:				
Greenvine	Blackland PE 44-64	7,000	5,000	3,000
GtB:				
Griter	Tight Sandy Loam PE 31-44	3,500	3,000	1,700
GtC2:				
Griter, eroded	Tight Sandy Loam PE 31-44	3,500	3,000	1,700
GU:				
Gullied land	---	---	---	---
ImA:				
Imogene	Tight Sandy Loam PE 31-44	4,000	3,200	1,800
JsC:				
Jedd	Sandstone Hill PE 48-68	5,000	4,000	3,000
JsE:				
Jedd	Sandstone Hill PE 48-68	5,000	4,000	3,000
KuB:				
Kurten	Claypan Savannah PE 48-68	5,000	4,000	2,500
LeB:				
Leming	Loamy Sand PE 31-44	4,500	4,000	2,000
LkA:				
Luckenbach	Clay Loam PE 44-64	5,000	4,000	3,000
LkB:				
Luckenbach	Clay Loam PE 44-64	5,000	4,000	3,000
LuB:				
Luling	Blackland PE 44-64	6,500	4,000	2,500
LuC:				
Luling	Blackland PE 44-64	6,500	4,000	2,500
LuC2:				
Luling, eroded	Blackland PE 44-64	6,500	4,000	2,500
MaA:				
Mabank	Claypan Prairie PE 44-64	6,000	5,000	3,000
MeA:				
Meguin	Loamy Bottomland PE 31-44	7,500	6,000	4,000
MfA:				
Meguin	Loamy Bottomland PE 31-44	7,500	6,000	4,000
MoB:				
Monteola	Blackland PE 31-44	4,000	3,500	2,500
MoC:				
Monteola	Blackland PE 31-44	4,000	3,500	2,500

Table 10.--Rangeland Productivity--Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
NaA:				
Navasota	Clayey Bottomland PE 44-64	---	---	---
NmB:				
Normangee	Claypan Prairie PE 44 - 64	5,500	4,000	3,000
NmC:				
Normangee	Claypan Prairie PE 44 - 64	5,500	4,000	3,000
NuC:				
Nusil	Sandy PE 25-44	5,000	4,000	2,500
PaC:				
Padina	Deep Sand PE 48-68	4,500	3,500	2,250
PbA:				
Papalote	Loamy Sand PE 19-31	4,500	3,900	2,000
PbB:				
Papalote	Tight Sandy Loam PE 31-44	4,800	4,000	2,000
PkB:				
Pavelek	Shallow PE 31-44	3,000	2,000	1,200
RhC:				
Rhymes	Sandy PE 25-44	5,000	4,000	2,000
RoB:				
Rosanky	Sandy Loam PE 48-68	6,000	4,500	3,000
RoC2:				
Rosanky, eroded	Sandy Loam PE 48-68	6,000	4,500	3,000
RsB:				
Rosenbrock	Rolling Blackland PE 31-44	4,200	3,200	2,000
RvA:				
Rutersville	Claypan Savannah PE 48-68	5,500	4,000	2,500
SaD:				
Sarnosa	Gray Sandy Loam PE 19-31	4,500	3,500	2,500
ScC:				
Schattel	Sloping Clay Loam PE 31-44	3,500	2,500	2,000
ShC:				
Shalba	Claypan Savannah PE 48-68	4,500	3,500	2,000
SnC:				
Shiner	Chalky Ridge PE 44-64	3,000	2,000	1,000
SnE:				
Shiner	Chalky Ridge PE 44-64	3,000	2,000	1,000
SoC:				
Shiro	Sandy Loam PE 48-68	5,000	4,200	2,500
SsC:				
Silstid	Sandy PE 48-68	4,500	4,000	2,000

Table 10.--Rangeland Productivity--Continued

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
SvD:				
Silvern	Gravelly PE 48-68	4,500	3,000	2,000
SwA:				
Singleton	Claypan Savannah PE 48-68	5,000	4,000	2,500
SwC:				
Singleton	Claypan Savannah PE 48-68	5,000	4,000	2,500
SxB:				
Styx	Sandy PE 48-68	5,500	4,500	3,000
SyC:				
Sunev	Clay Loam PE 44-64	7,000	5,500	3,500
SyE:				
Sunev	Clay Loam PE 44-64	7,000	5,500	3,500
TbA:				
Tabor	Sandy Loam PE 48-68	6,500	5,500	3,500
TbB:				
Tabor	Sandy Loam PE 48-68	6,500	5,500	3,500
TnA:				
Tinn	Clayey Bottomland PE 44-64	7,000	6,000	4,000
ToA:				
Tinn	Clayey Bottomland PE 44-64	7,000	6,000	4,000
TrB:				
Tordia	Rolling Blackland PE 31-44	4,000	3,500	2,500
TtC:				
Tremona	Sandy PE 48-68	5,000	3,500	2,500
W:				
Water	---	---	---	---
WaA:				
Waelder	Loamy Bottomland PE 48-68	7,500	6,500	4,000
WeA:				
Waelder	Loamy Bottomland PE 48-68	7,500	6,500	4,000
WsC:				
Weesatche	Sandy Loam PE 31-44	5,600	4,400	3,000
WwA:				
Wilson	Claypan Prairie PE 44-64	6,000	4,500	3,000
ZkB:				
Zack	Claypan Prairie PE 44-64	5,000	3,500	2,000
ZuB:				
Zulch	Claypan Prairie PE 44-64	5,000	4,000	3,500

Table 11.--Camp Areas, Picnic Areas, and Playgrounds

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AmB:							
Alum	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.87	Too sandy	0.87	Too sandy	0.87
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
						Large stones content	0.01
ApC:							
Arenosa	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.12
ArA:							
Arol	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
ArB:							
Arol	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
AxB:							
Axtell	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
						Large stones content	0.01
AxC:							
Axtell	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
						Large stones content	0.01
AxE:							
Axtell	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slope	1.00
		Slope	0.04	Slope	0.04	Slow water movement	0.45
						Large stones content	0.01

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
BnB:							
Benchley	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
BoA:							
Bosque	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
BpA:							
Bosque	55	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
Tinn	42	Very limited		Very limited		Very limited	
		Flooding	1.00	Slow water movement	1.00	Flooding	1.00
		Slow water movement	1.00	Too clayey	1.00	Slow water movement	1.00
		Too clayey	1.00	Flooding	0.40	Too clayey	1.00
BrA:							
Branyon	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
BtB:							
Bryde	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
BuA:							
Buchel	85	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Too clayey	0.50	Flooding	0.60
		Too clayey	0.50	Slow water movement	0.45	Too clayey	0.50
		Slow water movement	0.45			Slow water movement	0.45
BvA:							
Buchel	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Too clayey	0.50	Flooding	1.00
		Too clayey	0.50	Slow water movement	0.45	Too clayey	0.50
		Slow water movement	0.45	Flooding	0.40	Slow water movement	0.45
BwB:							
Burlewash	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
BwC2:							
Burlewash, eroded---	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Depth to bedrock	0.54
						Slope	0.50
						Slow water movement	0.45
BwE:							
Burlewash-----------	85	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to bedrock	0.65
						Slow water movement	0.45
CaB:							
Cadell--------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
CbB:							
Carbengle-----------	90	Not limited		Not limited		Not limited	
CbC:							
Carbengle-----------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.50
						Depth to bedrock	0.01
CbC2:							
Carbengle, eroded---	90	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.90
						Slope	0.50
CbE:							
Carbengle-----------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Depth to bedrock	0.65
ChA:							
Chazos--------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.94	Too sandy	0.94	Too sandy	0.94
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
						Gravel content	0.06
ChB:							
Chazos--------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.94	Too sandy	0.94	Too sandy	0.94
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
						Gravel content	0.06

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
CnB:							
Conquista	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
CnG:							
Conquista	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
CoA:							
Cost	85	Very limited		Very limited		Very limited	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Salinity	1.00	Salinity	1.00	Salinity	1.00
		Flooding	1.00	Slow water movement	1.00	Slow water movement	1.00
		Slow water movement	1.00	Too sandy	0.83	Too sandy	0.83
		Too sandy	0.83	Depth to saturated zone	0.19	Flooding	0.60
CpB:							
Coy	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
CrB:							
Crockett	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
CrC2:							
Crockett, eroded	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
CsB:							
Crockett	85	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.45	Slow water movement	0.45	Gravel content	1.00
		Gravel content	0.02	Gravel content	0.02	Slow water movement	0.45
						Large stones content	0.03

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
CsC2:							
Crockett, eroded	80	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.45	Slow water movement	0.45	Gravel content	1.00
		Gravel content	0.02	Gravel content	0.02	Slope	0.50
						Slow water movement	0.45
						Large stones content	0.03
CuB:							
Cuero	85	Not limited		Not limited		Not limited	
DeA:							
Degola	90	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
DfA:							
Degola	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
DmB:							
Dimebox	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
DyC2:							
Dreyer, eroded	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Slope	0.50
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
						Slow water movement	0.45
DyE:							
Dreyer	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Slope	1.00
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
		Slope	0.04	Slope	0.04	Slow water movement	0.45
EcB:							
Ecleto	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
EcC:							
Ecleto	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.39	Slow water movement	0.39	Slope	0.50
						Slow water movement	0.39
EdB:							
Edge	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
						Slope	0.12
EdC2:							
Edge, eroded	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
EdD3:							
Edge, severely eroded	100	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	1.00
						Slow water movement	0.45
EdE2:							
Edge	80	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.50	Gravel content	0.50	Gravel content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
EgC:							
Edge	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
EgE:							
Edge	80	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.50	Gravel content	0.50	Gravel content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slope	1.00
		Slope	0.04	Slope	0.04	Slow water movement	0.45

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
EkB:							
Elmendorf	60	Very limited		Very limited		Very limited	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
Denhawken	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
EkC:							
Elmendorf	60	Very limited		Very limited		Very limited	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
Denhawken	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
EsB:							
Eloso	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
FnB:							
Flatonia	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
FsB:							
Frelsburg	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
FsC:							
Frelsburg	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Slope	0.50
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
						Slow water movement	0.45
GfA:							
Ganado	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Slow water movement	1.00	Flooding	1.00
		Slow water movement	1.00	Too clayey	1.00	Slow water movement	1.00
		Too clayey	1.00	Flooding	0.40	Too clayey	1.00

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
GhC:							
Gholson	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.92	Too sandy	0.92	Too sandy	0.92
						Slope	0.12
GkC:							
Gillett	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
						Depth to bedrock	0.16
						Slope	0.12
GkF:							
Gillett	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.96	Slope	0.96	Slope	1.00
		Slow water movement	0.45	Slow water movement	0.45	Large stones content	1.00
		Large stones content	0.18	Large stones content	0.18	Slow water movement	0.45
						Depth to bedrock	0.16
						Gravel content	0.11
GP:							
Pits	100	Not rated		Not rated		Not rated	
GrB:							
Greenvine	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
GrC:							
Greenvine	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Slope	0.50
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
						Slow water movement	0.45
						Depth to bedrock	0.01
GtB:							
Griter	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
GtC2:							
Griter, eroded	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slope	0.50
						Slow water movement	0.39
GU:							
Gullied land	85	Not rated		Not rated		Not rated	

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
ImA:							
Imogene	90	Very limited		Very limited		Very limited	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
JsC:							
Jedd	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.34	Gravel content	0.34	Gravel content	1.00
						Slope	0.50
						Depth to bedrock	0.03
JsE:							
Jedd	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.34	Gravel content	0.34	Slope	1.00
		Slope	0.16	Slope	0.16	Gravel content	1.00
						Depth to bedrock	0.46
KuB:							
Kurten	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
LeB:							
Leming	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.83	Too sandy	0.83	Too sandy	0.83
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
LkA:							
Luckenbach	85	Not limited		Not limited		Not limited	
LkB:							
Luckenbach	85	Not limited		Not limited		Not limited	
LuB:							
Luling	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
LuC:							
Luling	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Slope	0.50
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
						Slow water movement	0.45
LuC2:							
Luling, eroded	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Slope	0.50
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
						Slow water movement	0.45

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
MaA:							
Mabank	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
MeA:							
Meguin	80	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
MfA:							
Meguin	80	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
MoB:							
Monteola	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
MoC:							
Monteola	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Slope	0.50
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
						Slow water movement	0.45
NaA:							
Navasota	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Ponding	1.00	Flooding	1.00
		Ponding	1.00	Slow water movement	1.00	Ponding	1.00
		Slow water movement	1.00	Too clayey	1.00	Slow water movement	1.00
		Too clayey	1.00	Depth to saturated zone	0.48	Too clayey	1.00
		Depth to saturated zone	0.81	Flooding	0.40	Depth to saturated zone	0.81
NmB:							
Normangee	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
NmC:							
Normangee	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
NuC:							
Nusil	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
						Slope	0.12

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PaC:							
Padina	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.96	Too sandy	0.96	Too sandy	0.96
						Slope	0.12
PbA:							
Papalote	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.83	Too sandy	0.83	Too sandy	0.83
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
PbB:							
Papalote	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
PkB:							
Pavelek	85	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
						Gravel content	0.06
RhC:							
Rhymes	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.12
RoB:							
Rosanky	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.05
RoC2:							
Rosanky, eroded	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
						Gravel content	0.05
RsB:							
Rosenbrock	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
RvA:							
Rutersville	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.96	Too sandy	0.96	Too sandy	0.96
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
SaD:							
Sarnosa	85	Not limited		Not limited		Very limited	
						Slope	1.00

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
ScC:							
Schattel	85	Very limited		Very limited		Very limited	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
						Slope	0.50
ShC:							
Shalba	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
						Slope	0.12
SnC:							
Shiner	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.50
						Gravel content	0.04
SnE:							
Shiner	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
						Gravel content	0.04
SoC:							
Shiro	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.87	Too sandy	0.87	Too sandy	0.87
		Slow water movement	0.39	Slow water movement	0.39	Slow water movement	0.39
						Depth to bedrock	0.16
						Slope	0.12
SsC:							
Silstid	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.92	Too sandy	0.92	Too sandy	0.92
						Slope	0.12
SvD:							
Silvern	80	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Too sandy	0.57	Too sandy	0.57	Slope	0.88
						Too sandy	0.57
						Large stones content	0.54
SwA:							
Singleton	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
SwC:							
Singleton	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
						Slope	0.12
						Depth to bedrock	0.03

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
SxB:							
Styx	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.85	Too sandy	0.85	Too sandy	0.85
SyC:							
Sunev	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
SyE:							
Sunev	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
TbA:							
Tabor	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
						Gravel content	0.06
TbB:							
Tabor	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
						Gravel content	0.06
TnA:							
Tinn	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Slow water movement	1.00	Slow water movement	1.00
		Slow water movement	1.00	Too clayey	1.00	Too clayey	1.00
		Too clayey	1.00			Flooding	0.60
ToA:							
Tinn	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Slow water movement	1.00	Flooding	1.00
		Slow water movement	1.00	Too clayey	1.00	Slow water movement	1.00
		Too clayey	1.00	Flooding	0.40	Too clayey	1.00
TrB:							
Tordia	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
TtC:							
Tremona	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.96	Too sandy	0.96	Too sandy	0.96
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
						Slope	0.12
W:							
Water	100	Not rated		Not rated		Not rated	

Table 11.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
WaA:							
Waelder	85	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
WeA:							
Waelder	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
WsC:							
Weesatche	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
WwA:							
Wilson	95	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
ZkB:							
Zack	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
ZuB:							
Zulch	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45

Table 12.--Paths, Trails, and Golf Fairways

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
AmB:							
Alum	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.87	Too sandy	0.87	Droughty	0.01
						Large stones content	0.01
ApC:							
Arenosa	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.97
ArA:							
Arol	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.20
ArB:							
Arol	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.01
AxB:							
Axtell	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.54
						Large stones content	0.01
AxC:							
Axtell	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.54
						Large stones content	0.01
AxE:							
Axtell	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.54
						Slope	0.04
						Large stones content	0.01
BnB:							
Benchley	85	Not limited		Not limited		Not limited	
BoA:							
Bosque	85	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
BpA:							
Bosque	55	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
Tinn	42	Very limited		Very limited		Very limited	
		Too clayey	1.00	Too clayey	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too clayey	1.00

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
BrA:							
Branyon	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
BtB:							
Bryde	85	Not limited		Not limited		Not limited	
BuA:							
Buchel	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Flooding	0.60
BvA:							
Buchel	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too clayey	1.00
BwB:							
Burlewash	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Droughty	0.16
BwC2:							
Burlewash, eroded	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.54
						Droughty	0.10
BwE:							
Burlewash	85	Not limited		Not limited		Very limited	
						Gravel content	1.00
						Depth to bedrock	0.65
						Droughty	0.21
						Slope	0.04
CaB:							
Cadell	85	Not limited		Not limited		Not limited	
CbB:							
Carbengle	90	Not limited		Not limited		Very limited	
						Carbonate content	1.00
						Depth to bedrock	0.10
CbC:							
Carbengle	90	Not limited		Not limited		Very limited	
						Carbonate content	1.00
						Depth to bedrock	0.01
CbC2:							
Carbengle, eroded	90	Not limited		Not limited		Very limited	
						Carbonate content	1.00
						Depth to bedrock	0.90
CbE:							
Carbengle	85	Not limited		Not limited		Very limited	
						Carbonate content	1.00
						Depth to bedrock	0.65
						Slope	0.04

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
ChA:							
Chazos---------------	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.94	Too sandy	0.94		
ChB:							
Chazos---------------	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.94	Too sandy	0.94		
CnB:							
Conquista------------	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
CnG:							
Conquista------------	85	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Too clayey	0.50	Slope	1.00
		Too clayey	0.50	Slope	0.22	Too clayey	1.00
CoA:							
Cost-----------------	85	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.83	Too sandy	0.83	Salinity	1.00
						Sodium content	1.00
						Droughty	1.00
						Flooding	0.60
						Depth to saturated zone	0.19
CpB:							
Coy------------------	85	Not limited		Not limited		Not limited	
CrB:							
Crockett-------------	85	Not limited		Not limited		Not limited	
CrC2:							
Crockett, eroded-----	90	Not limited		Not limited		Not limited	
CsB:							
Crockett-------------	85	Not limited		Not limited		Somewhat limited	
						Large stones content	0.03
						Gravel content	0.02
CsC2:							
Crockett, eroded-----	80	Not limited		Not limited		Somewhat limited	
						Large stones content	0.03
						Gravel content	0.02
CuB:							
Cuero----------------	85	Not limited		Not limited		Not limited	
DeA:							
Degola---------------	90	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
DfA:							
Degola---------------	85	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DmB:							
Dimebox	100	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
DyC2:							
Dreyer, eroded	80	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
DyE:							
Dreyer	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Slope	0.04
EcB:							
Ecleto	85	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.47
EcC:							
Ecleto	85	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.38
EdB:							
Edge	90	Not limited		Not limited		Not limited	
EdC2:							
Edge, eroded	100	Not limited		Not limited		Not limited	
EdD3:							
Edge, severely eroded	100	Not limited		Not limited		Not limited	
EdE2:							
Edge	80	Not limited		Not limited		Somewhat limited	
						Gravel content	0.50
EgC:							
Edge	100	Not limited		Not limited		Not limited	
EgE:							
Edge	80	Not limited		Not limited		Somewhat limited	
						Gravel content	0.50
						Slope	0.04
EkB:							
Elmendorf	60	Not limited		Not limited		Very limited	
						Sodium content	1.00
Denhawken	40	Not limited		Not limited		Not limited	
EkC:							
Elmendorf	60	Not limited		Not limited		Very limited	
						Sodium content	1.00
Denhawken	40	Not limited		Not limited		Not limited	

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EsB:							
Eloso	90	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
FnB:							
Flatonia	85	Not limited		Not limited		Not limited	
FsB:							
Frelsburg	100	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
FsC:							
Frelsburg	100	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
GfA:							
Ganado	85	Very limited		Very limited		Very limited	
		Too clayey	1.00	Too clayey	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too clayey	1.00
GhC:							
Gholson	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.92	Too sandy	0.92		
GkC:							
Gillett	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.16
GkF:							
Gillett	85	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.18	Large stones content	0.18	Large stones content	1.00
						Slope	0.96
						Depth to bedrock	0.16
GP:							
Pits	100	Not rated		Not rated		Not rated	
GrB:							
Greenvine	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Depth to bedrock	0.01
GrC:							
Greenvine	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Depth to bedrock	0.01
GtB:							
Griter	85	Not limited		Not limited		Not limited	
GtC2:							
Griter, eroded	85	Not limited		Not limited		Not limited	
GU:							
Gullied land	85	Not rated		Not rated		Not rated	

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
ImA:							
Imogene	90	Not limited		Not limited		Very limited	
						Sodium content	1.00
						Droughty	0.02
JsC:							
Jedd	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.34
						Depth to bedrock	0.03
JsE:							
Jedd	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.46
						Gravel content	0.34
						Slope	0.16
KuB:							
Kurten	85	Not limited		Not limited		Not limited	
LeB:							
Leming	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.83	Too sandy	0.83		
LkA:							
Luckenbach	85	Not limited		Not limited		Not limited	
LkB:							
Luckenbach	85	Not limited		Not limited		Not limited	
LuB:							
Luling	100	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
LuC:							
Luling	100	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
LuC2:							
Luling, eroded	100	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
MaA:							
Mabank	85	Not limited		Not limited		Not limited	
MeA:							
Meguin	80	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
MfA:							
Meguin	80	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
MoB:							
Monteola	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
MoC:							
Monteola	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
NaA:							
Navasota	80	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Too clayey	1.00	Too clayey	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too clayey	1.00
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Depth to saturated zone	0.48
NmB:							
Normangee	85	Not limited		Not limited		Not limited	
NmC:							
Normangee	85	Not limited		Not limited		Not limited	
NuC:							
Nusil	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.29
PaC:							
Padina	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.96	Too sandy	0.96	Droughty	0.42
PbA:							
Papalote	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.83	Too sandy	0.83		
PbB:							
Papalote	85	Not limited		Not limited		Not limited	
PkB:							
Pavelek	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Depth to cemented pan	1.00
						Too clayey	1.00
						Carbonate content	1.00
						Droughty	0.69
RhC:							
Rhymes	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.57
RoB:							
Rosanky	85	Not limited		Not limited		Not limited	
RoC2:							
Rosanky, eroded	85	Not limited		Not limited		Not limited	
RsB:							
Rosenbrock	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
RvA:							
Rutersville	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.96	Too sandy	0.96		
SaD:							
Sarnosa	85	Not limited		Not limited		Not limited	
ScC:							
Schattel	85	Not limited		Not limited		Very limited	
						Sodium content	1.00
ShC:							
Shalba	85	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.99
SnC:							
Shiner	85	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Carbonate content	1.00
SnE:							
Shiner	85	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Carbonate content	1.00
						Slope	0.04
SoC:							
Shiro	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.87	Too sandy	0.87	Depth to bedrock	0.16
SsC:							
Silstid	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.92	Too sandy	0.92	Droughty	0.06
SvD:							
Silvern	80	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.57	Too sandy	0.57	Droughty	1.00
						Gravel content	1.00
						Large stones content	0.54
SwA:							
Singleton	85	Not limited		Not limited		Not limited	
SwC:							
Singleton	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.03
SxB:							
Styx	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.85	Too sandy	0.85	Droughty	0.01

Table 12.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SyC:							
Sunev	85	Not limited		Not limited		Very limited	
						Carbonate content	1.00
SyE:							
Sunev	80	Not limited		Not limited		Very limited	
						Carbonate content	1.00
						Slope	0.63
TbA:							
Tabor	90	Not limited		Not limited		Not limited	
TbB:							
Tabor	90	Not limited		Not limited		Not limited	
TnA:							
Tinn	85	Very limited		Very limited		Very limited	
		Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
						Flooding	0.60
ToA:							
Tinn	90	Very limited		Very limited		Very limited	
		Too clayey	1.00	Too clayey	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too clayey	1.00
TrB:							
Tordia	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
TtC:							
Tremona	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.96	Too sandy	0.96	Droughty	0.11
W:							
Water	100	Not rated		Not rated		Not rated	
WaA:							
Waelder	85	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
WeA:							
Waelder	85	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
WsC:							
Weesatche	85	Not limited		Not limited		Not limited	
WwA:							
Wilson	95	Not limited		Not limited		Not limited	
ZkB:							
Zack	85	Not limited		Not limited		Not limited	
ZuB:							
Zulch	85	Not limited		Not limited		Not limited	

Table 13.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
AmB:												
Alum	Fair	Good	Good	Fair	---	Good	Poor	Very poor	Good	---	Very poor	Good
ApC:												
Arenosa	Poor	Poor	Fair	---	---	Fair	Very poor	Very poor	Poor	---	Very poor	Fair
ArA:												
Arol	Fair	Good	Fair	Fair	---	Fair	Fair	Fair	Fair	Fair	Fair	Fair
ArB:												
Arol	Fair	Good	Fair	Fair	---	Fair	Poor	Poor	Fair	Fair	Poor	Fair
AxB:												
Axtell	Fair	Fair	Good	Good	---	Good	Poor	Very poor	Fair	Good	Very poor	Good
AxC:												
Axtell	Fair	Fair	Good	Good	---	Good	Poor	Very poor	Fair	Good	Very poor	Good
AxE:												
Axtell	Poor	Fair	Good	Good	---	Good	Poor	Very poor	Fair	Good	Very poor	Good
BnB:												
Benchley	Good	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
BoA:												
Bosque	Very poor	Poor	Fair	---	---	Good	Poor	Very poor	Poor	---	Very poor	Fair
BpA:												
Bosque	Very poor	Poor	Fair	---	---	Good	Poor	Very poor	Poor	---	Very poor	Fair
Tinn	Poor	Fair	Fair	Good	---	---	Poor	Fair	Fair	Fair	Poor	---
BrA:												
Branyon	Good	Good	Poor	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
BtB:												
Bryde	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
BuA:												
Buchel	Fair	Fair	Poor	---	---	Fair	Poor	Poor	Fair	---	Very poor	Poor
BvA:												
Buchel	Very poor	Poor	Poor	---	---	Fair	Poor	Poor	Poor	---	Poor	Poor
BwB:												
Burlewash	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
BwC2:												
Burlewash	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
BwE:												
Burlewash	Poor	Fair	Good	---	---	Good	Very poor	Very poor	Fair	---	Very poor	Good
CaB:												
Cadell	Fair	Good	Good	Fair	---	Good	Poor	Very poor	Good	Fair	Very poor	Good
CbB:												
Carbengle	Fair	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
CbC:												
Carbengle	Fair	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
CbC2:												
Carbengle	Fair	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
CbE:												
Carbengle	Fair	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
ChA: Chazos	Good	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
ChB: Chazos	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
CnB: Conquista	Poor	Fair	Fair	---	---	Fair	Poor	Very poor	Poor	---	Very poor	Fair
CnG: Conquista	Very poor	Very poor	Fair	---	---	Fair	Very poor	Very poor	Poor	---	Very poor	Fair
CoA: Cost	Very poor	Very poor	Very poor	---	---	Very poor	Poor	Poor	Very poor	Very poor	Poor	Very poor
CpB: Coy	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
CrB: Crockett	Fair	Good	Good	Good	---	Good	Poor	Poor	Good	---	Poor	Good
CrC2: Crockett	Fair	Good	Good	Good	---	Good	Poor	Poor	Good	---	Poor	Good
CsB: Crockett	Fair	Good	Good	Good	---	Good	Poor	Poor	Good	---	Poor	Good
CsC2: Crockett	Fair	Good	Good	Good	---	Good	Poor	Poor	Good	---	Poor	Good
CuB: Cuero	Good	Good	Good	---	---	Fair	Poor	Poor	Good	---	Poor	Fair
DeA: Degola	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
DfA: Degola	Very poor	Poor	Fair	---	---	Good	Poor	Very poor	Poor	---	Very poor	Fair
DmB: Dimebox	Good	Good	Poor	---	---	Poor	Very poor	Very poor	Fair	---	Very poor	Poor
DyC2: Dreyer	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
DyE: Dreyer	Poor	Fair	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	---
EcB: Ecleto	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
EcC: Ecleto	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
EdB: Edge	Fair	Fair	Good	Good	---	Good	Very poor	Very poor	Fair	Good	Very poor	Good
EdC2: Edge	Fair	Fair	Good	Good	---	Good	Very poor	Very poor	Fair	Good	Very poor	Good
EdD3: Edge	Poor	Fair	Good	Good	---	Good	Very poor	Very poor	Fair	Good	Very poor	Good
EdE2: Edge	Fair	Fair	Good	Good	---	Good	Very poor	Very poor	Fair	Good	Very poor	Good
EgC: Edge	Fair	Fair	Good	Good	---	Good	Very poor	Very poor	Fair	Good	Very poor	Good

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
EgE:												
Edge	Poor	Fair	Good	Good	---	Good	Very poor	Very poor	Fair	Good	Very poor	Good
EkB:												
Elmendorf	Good	Good	Fair	---	---	Good	Very poor	Very poor	Good	---	Very poor	Fair
Denhawken	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
EkC:												
Elmendorf	Good	Good	Fair	---	---	Good	Very poor	Very poor	Good	---	Very poor	Fair
Denhawken	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
EsB:												
Eloso	Fair	Fair	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
FnB:												
Flatonia	Good	Good	Good	---	---	Fair	Very poor	Very poor	Good	---	Very poor	Fair
FsB:												
Frelsburg	Good	Good	Fair	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
FsC:												
Frelsburg	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
GfA:												
Ganado	Poor	Fair	Fair	Good	---	Good	Poor	Poor	Fair	Good	Very poor	---
GhC:												
Gholson	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
GkC:												
Gillett	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
GkF: Gillett	Very poor	Very poor	Very poor	---	---	Fair	Very poor	Very poor	Very poor	---	Very poor	Poor
GP: Pits	Very poor	Very poor	Very poor	---	---	Very poor	Very poor	Very poor	Very poor	---	Very poor	Very poor
GrB: Greenvine	Good	Good	Fair	---	---	Fair	Poor	Poor	Good	---	Poor	Fair
GrC: Greenvine	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
GtB: Griter	Fair	Fair	Good	---	---	Good	Very poor	Very poor	Fair	---	Very poor	Good
GtC2: Griter	Fair	Fair	Good	---	---	Good	Very poor	Very poor	Fair	---	Very poor	Good
GU: Gullied Land	Poor	Fair	Poor	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
ImA: Imogene	Poor	Poor	Poor	---	---	Poor	Poor	Very poor	Poor	---	Very poor	Poor
JsC: Jedd	Poor	Fair	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
JsE: Jedd	Poor	Fair	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
KuB: Kurten	Fair	Fair	Good	Good	---	Good	Poor	Very poor	Fair	Good	Very poor	Good
LeB: Leming	Fair	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
LkA: Luckenbach	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
LkB: Luckenbach	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
LuB: Luling	Good	Good	Poor	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Poor
LuC: Luling	Fair	Good	Poor	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Poor
LuC2: Luling	Fair	Good	Poor	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Poor
MaA: Mabank	Fair	Good	Good	---	---	Fair	Fair	Fair	Good	---	Fair	Fair
MeA: Meguin	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
MfA: Meguin	Very poor	Poor	Fair	---	---	Good	Poor	Very poor	Poor	---	Very poor	Fair
MoB: Monteola	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
MoC: Monteola	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
NaA: Navasota	Poor	Fair	Fair	Fair	---	---	Poor	Good	Fair	Fair	Fair	---
NmB: Normangee	Fair	Fair	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
NmC: Normangee	Fair	Fair	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair
NuC: Nusil	Fair	Fair	Good	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
PaC: Padina	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
PbA: Papalote	Good	Good	Good	---	Poor	Good	Poor	Poor	Good	---	Poor	Good
PbB: Papalote	Good	Good	Good	---	Poor	Good	Poor	Poor	Good	---	Poor	Good
PkB: Pavelek	Fair	Fair	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
RhC: Rhymes	Fair	Fair	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
RoB: Rosanky	Good	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
RoC2: Rosanky	Fair	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
RsB: Rosenbrock	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
RvA: Rutersville	Fair	Good	Good	---	---	Good	Fair	Fair	Good	---	Fair	Good
SaD: Sarnosa	Fair	Good	Good	---	---	Good	Very poor	Very poor	Good	---	Very poor	Good

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
ScC: Schattel	Poor	Fair	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
ShC: Shalba	Poor	Poor	Poor	---	---	Fair	Poor	Very poor	Poor	---	Very poor	Poor
SnC: Shiner	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SnE: Shiner	Poor	Fair	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SoC: Shiro	Fair	Good	Good	Fair	Fair	---	Poor	Very poor	Good	Fair	Poor	---
SsC: Silstid	Poor	Poor	Fair	Poor	Poor	Good	Poor	Very poor	Poor	Poor	Very poor	Fair
SvD: Silvern	Poor	Poor	Poor	---	---	Fair	Very poor	Very poor	Poor	---	Very poor	Poor
SwA: Singleton	Fair	Good	Fair	Fair	---	Good	Fair	Fair	Fair	Fair	Fair	Fair
SwC: Singleton	Fair	Good	Fair	Fair	---	Good	Poor	Poor	Fair	Fair	Poor	Fair
SxB: Styx	Fair	Fair	Good	Fair	---	Good	Poor	Very poor	Fair	---	Very poor	Good
SyC: Sunev	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
SyE: Sunev	Poor	Fair	Good	---	---	Good	Poor	Very poor	Fair	---	Very poor	Good

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
TbA:												
Tabor	Fair	Good	Good	---	---	Good	Very poor	Very poor	Good	---	Very poor	Good
TbB:												
Tabor	Fair	Good	Good	---	---	Good	Very poor	Very poor	Good	---	Very poor	Good
TnA:												
Tinn	Fair	Fair	Fair	Good	---	---	Poor	Fair	Fair	Good	Poor	---
ToA:												
Tinn	Poor	Fair	Fair	Good	---	---	Poor	Fair	Fair	Fair	Poor	---
TrB:												
Tordia	Fair	Good	Poor	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Poor
TtC:												
Tremona	Fair	Good	Good	---	---	Good	Very poor	Very poor	Good	---	Very poor	Good
W:												
Water	---	---	---	---	---	---	---	---	---	---	---	---
WaA:												
Waelder	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
WeA:												
Waelder	Poor	Fair	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair
WsC:												
Weesatche	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
WwA:												
Wilson	Fair	Fair	Good	---	---	Fair	Fair	Fair	Fair	---	Fair	Fair
ZkB:												
Zack	Fair	Good	Good	Good	---	Good	Poor	Very poor	Good	Good	Very poor	Good
ZuB:												
Zulch	Fair	Good	Good	Good	---	Fair	Fair	Fair	Good	---	Fair	Fair

Table 14.--Dwellings and Small Commercial Buildings

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AmB:							
Alum	100	Not limited		Not limited		Not limited	
ApC:							
Arenosa	85	Not limited		Not limited		Not limited	
ArA:							
Arol	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.20		
ArB:							
Arol	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.01		
AxB:							
Axtell	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
AxC:							
Axtell	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
AxE:							
Axtell	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
BnB:							
Benchley	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
BoA:							
Bosque	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
BpA:							
Bosque	55	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Tinn	42	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
BrA:							
Branyon	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
BtB:							
Bryde	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
BuA:							
Buchel	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
BvA:							
Buchel	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
BwB:							
Burlewash	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.64		
BwC2:							
Burlewash, eroded	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.54		
BwE:							
Burlewash	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.04	Depth to soft bedrock	0.64	Slope	1.00
				Slope	0.04		
CaB:							
Cadell	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to saturated zone	0.99		
CbB:							
Carbengle	90	Not limited		Somewhat limited		Not limited	
				Depth to soft bedrock	0.10		
CbC:							
Carbengle	90	Not limited		Somewhat limited		Not limited	
				Depth to soft bedrock	0.01		
CbC2:							
Carbengle, eroded	90	Not limited		Somewhat limited		Not limited	
				Depth to soft bedrock	0.90		

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
CbE:							
Carbengle	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Depth to soft bedrock	0.64	Slope	1.00
				Slope	0.04		
ChA:							
Chazos	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
ChB:							
Chazos	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
CnB:							
Conquista	85	Not limited		Not limited		Not limited	
CnG:							
Conquista	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
CoA:							
Cost	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
CpB:							
Coy	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
CrB:							
Crockett	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
CrC2:							
Crockett, eroded	90	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
CsB:							
Crockett	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
CsC2:							
Crockett, eroded	80	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
CuB:							
Cuero	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
DeA:							
Degola	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
DfA:							
Degola	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
DmB:							
Dimebox	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
DyC2:							
Dreyer, eroded	80	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
DyE:							
Dreyer	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
EcB:							
Ecleto	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Depth to soft bedrock	1.00
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Shrink-swell	1.00
EcC:							
Ecleto	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Depth to soft bedrock	1.00
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Shrink-swell	1.00
EdB:							
Edge	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
EdC2:							
Edge, eroded	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
EdD3:							
Edge, severely eroded	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.50
EdE2:							
Edge	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
EgC:							
Edge	100	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
EgE:							
Edge	80	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
EkB:							
Elmendorf	60	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	1.00	Shrink-swell	0.50
Denhawken	40	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
EkC:							
Elmendorf	60	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Denhawken	40	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
EsB:							
Eloso	90	Very limited		Not limited		Very limited	
		Shrink-swell	1.00			Shrink-swell	1.00
FnB:							
Flatonia	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
FsB:							
Frelsburg	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
FsC:							
Frelsburg	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
GfA:							
Ganado	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
GhC:							
Gholson	85	Not limited		Not limited		Not limited	
GkC:							
Gillett	85	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Depth to soft bedrock	0.15	Shrink-swell	1.00
GkF:							
Gillett	85	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Slope	0.96	Slope	1.00
		Slope	0.96	Depth to soft bedrock	0.15	Shrink-swell	1.00
GP:							
Pits	100	Not rated		Not rated		Not rated	
GrB:							
Greenvine	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.01		

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
GrC:							
Greenvine	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.01		
GtB:							
Griter	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
GtC2:							
Griter, eroded	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
GU:							
Gullied land	85	Not rated		Not rated		Not rated	
ImA:							
Imogene	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
JsC:							
Jedd	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
				Depth to soft bedrock	0.03		
JsE:							
Jedd	85	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.16	Depth to soft bedrock	0.46	Shrink-swell	0.50
				Slope	0.16		
KuB:							
Kurten	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
LeB:							
Leming	85	Not limited		Somewhat limited		Not limited	
				Shrink-swell	0.50		
LkA:							
Luckenbach	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
LkB:							
Luckenbach	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
LuB:							
Luling	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
LuC:							
Luling	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
LuC2:							
Luling, eroded	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
MaA:							
Mabank	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
MeA:							
Meguin	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MfA:							
Meguin	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MoB:							
Monteola	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
MoC:							
Monteola	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
NaA:							
Navasota	80	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Depth to saturated zone	0.81	Shrink-swell	1.00	Depth to saturated zone	0.81
NmB:							
Normangee	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
NmC:							
Normangee	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
NuC:							
Nusil	85	Not limited		Not limited		Not limited	
PaC:							
Padina	85	Not limited		Not limited		Not limited	
PbA:							
Papalote	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
PbB:							
Papalote------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
PkB:							
Pavelek-------------	85	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Depth to thin cemented pan	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RhC:							
Rhymes--------------	85	Not limited		Somewhat limited		Not limited	
				Shrink-swell	0.50		
RoB:							
Rosanky-------------	85	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
RoC2:							
Rosanky, eroded-----	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RsB:							
Rosenbrock----------	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
RvA:							
Rutersville---------	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to saturated zone	0.90		
SaD:							
Sarnosa-------------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.88
ScC:							
Schattel------------	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
ShC:							
Shalba--------------	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Depth to soft bedrock	1.00
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Shrink-swell	1.00
SnC:							
Shiner--------------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
SnE:							
Shiner	85	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
SoC:							
Shiro	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.15		
SsC:							
Silstid	85	Not limited		Not limited		Not limited	
SvD:							
Silvern	80	Not limited		Not limited		Somewhat limited	
						Slope	0.12
SwA:							
Singleton	85	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
SwC:							
Singleton	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.03		
SxB:							
Styx	85	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.61		
SyC:							
Sunev	85	Not limited		Not limited		Not limited	
SyE:							
Sunev	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
TbA:							
Tabor	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
TbB:							
Tabor	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
TnA:							
Tinn	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Table 14.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
ToA:							
Tinn	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
TrB:							
Tordia	85	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
TtC:							
Tremona	85	Not limited		Very limited		Not limited	
				Shrink-swell	1.00		
				Depth to saturated zone	0.99		
W:							
Water	100	Not rated		Not rated		Not rated	
WaA:							
Waelder	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
WeA:							
Waelder	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
WsC:							
Weesatche	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WwA:							
Wilson	95	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
ZkB:							
Zack	85	Very limited		Not limited		Very limited	
		Shrink-swell	1.00			Shrink-swell	1.00
ZuB:							
Zulch	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
AmB:							
Alum	100	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.01
						Large stones content	0.01
ApC:							
Arenosa	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.97
ArA:							
Arol	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.20	Depth to bedrock	0.20
		Shrink-swell	1.00	Cutbanks cave	0.10		
				Too clayey	0.03		
ArB:							
Arol	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Depth to bedrock	0.01
		Shrink-swell	1.00	Too clayey	0.03		
				Depth to soft bedrock	0.01		
AxB:							
Axtell	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.12	Gravel content	0.54
		Shrink-swell	1.00	Cutbanks cave	0.10	Large stones content	0.01
AxC:							
Axtell	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.12	Gravel content	0.54
		Shrink-swell	1.00	Cutbanks cave	0.10	Large stones content	0.01
AxE:							
Axtell	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.12	Gravel content	0.54
		Shrink-swell	1.00	Cutbanks cave	0.10	Slope	0.04
		Slope	0.04	Slope	0.04	Large stones content	0.01
BnB:							
Benchley	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
BoA:							
Bosque	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Cutbanks cave	0.10		
BpA:							
Bosque	55	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Cutbanks cave	0.10		
Tinn	42	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
BrA:							
Branyon	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
BtB:							
Bryde	85	Very limited		Somewhat limited		Not limited	
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Low strength	1.00	Too clayey	0.03		
BuA:							
Buchel	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Too clayey	0.50		
BvA:							
Buchel	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
BwB:							
Burlewash	85	Very limited		Somewhat limited		Somewhat limited	
		Shrink-swell	1.00	Depth to soft bedrock	0.64	Depth to bedrock	0.65
		Low strength	1.00	Too clayey	0.28	Droughty	0.16
				Cutbanks cave	0.10		
BwC2:							
Burlewash, eroded	85	Very limited		Somewhat limited		Somewhat limited	
		Shrink-swell	1.00	Depth to soft bedrock	0.54	Depth to bedrock	0.54
		Low strength	1.00	Too clayey	0.28	Droughty	0.10
				Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
BwE:							
Burlewash	85	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Depth to soft bedrock	0.64	Gravel content	1.00
		Low strength	1.00	Cutbanks cave	0.10	Depth to bedrock	0.65
		Slope	0.04	Slope	0.04	Droughty	0.21
						Slope	0.04
CaB:							
Cadell	85	Very limited		Very limited		Not limited	
		Low strength	1.00	Depth to saturated zone	0.99		
		Shrink-swell	1.00	Too clayey	0.28		
				Cutbanks cave	0.10		
CbB:							
Carbengle	90	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Cutbanks cave	0.10	Carbonate content	1.00
				Depth to soft bedrock	0.10	Depth to bedrock	0.10
CbC:							
Carbengle	90	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Cutbanks cave	0.10	Carbonate content	1.00
				Depth to soft bedrock	0.01	Depth to bedrock	0.01
CbC2:							
Carbengle, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Depth to soft bedrock	0.90	Carbonate content	1.00
				Cutbanks cave	0.10	Depth to bedrock	0.90
CbE:							
Carbengle	85	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Depth to soft bedrock	0.64	Carbonate content	1.00
		Slope	0.04	Cutbanks cave	0.10	Depth to bedrock	0.65
				Slope	0.04	Slope	0.04
ChA:							
Chazos	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.03		
ChB:							
Chazos	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.03		
CnB:							
Conquista	85	Not limited		Somewhat limited		Very limited	
				Cutbanks cave	0.10	Too clayey	1.00

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
CnG:							
Conquista	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Too clayey	1.00
CoA:							
Cost	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Salinity	1.00
		Low strength	1.00	Cutbanks cave	1.00	Sodium content	1.00
		Shrink-swell	1.00	Flooding	0.60	Droughty	1.00
		Depth to saturated zone	0.19			Flooding	0.60
						Depth to saturated zone	0.19
CpB:							
Coy	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		
CrB:							
Crockett	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		
CrC2:							
Crockett, eroded	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		
CsB:							
Crockett	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.28	Large stones content	0.03
		Shrink-swell	1.00	Cutbanks cave	0.10	Gravel content	0.02
CsC2:							
Crockett, eroded	80	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.28	Large stones content	0.03
		Shrink-swell	1.00	Cutbanks cave	0.10	Gravel content	0.02
CuB:							
Cuero	85	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
		Shrink-swell	0.50				
DeA:							
Degola	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	0.22	Cutbanks cave	0.10		
DfA:							
Degola	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	0.22	Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
DmB:							
Dimebox	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
DyC2:							
Dreyer, eroded	80	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
DyE:							
Dreyer	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50	Slope	0.04
		Slope	0.04	Slope	0.04		
EcB:							
Ecleto	85	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Low strength	1.00	Cutbanks cave	0.10	Droughty	0.47
		Shrink-swell	1.00				
EcC:							
Ecleto	85	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Low strength	1.00	Cutbanks cave	0.10	Droughty	0.38
		Shrink-swell	1.00				
EdB:							
Edge	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		
EdC2:							
Edge, eroded	100	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
EdD3:							
Edge, severely eroded	100	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		
EdE2:							
Edge	80	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Gravel content	0.50
		Shrink-swell	0.50				
EgC:							
Edge	100	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EgE:							
Edge	80	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Gravel content	0.50
		Shrink-swell	0.50	Slope	0.04	Slope	0.04
		Slope	0.04				
EkB:							
Elmendorf	60	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Cutbanks cave	0.10	Sodium content	1.00
		Shrink-swell	0.50	Too clayey	0.03		
Denhawken	40	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		
EkC:							
Elmendorf	60	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Cutbanks cave	0.10	Sodium content	1.00
		Shrink-swell	1.00	Too clayey	0.03		
Denhawken	40	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		
EsB:							
Eloso	90	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Too clayey	0.28	Too clayey	1.00
		Shrink-swell	1.00	Cutbanks cave	0.10		
FnB:							
Flatonia	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		
FsB:							
Frelsburg	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.72		
FsC:							
Frelsburg	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.72		
GfA:							
Ganado	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
GhC:							
Gholson	85	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
GkC:							
Gillett	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.15	Depth to bedrock	0.16
		Shrink-swell	1.00	Too clayey	0.12		
				Cutbanks cave	0.10		
GkF:							
Gillett	85	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Slope	0.96	Large stones content	1.00
		Shrink-swell	1.00	Depth to soft bedrock	0.15	Slope	0.96
		Slope	0.96	Too clayey	0.12	Depth to bedrock	0.16
				Cutbanks cave	0.10		
GP:							
Pits	100	Not rated		Not rated		Not rated	
GrB:							
Greenvine	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50	Depth to bedrock	0.01
				Depth to soft bedrock	0.01		
GrC:							
Greenvine	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50	Depth to bedrock	0.01
				Depth to soft bedrock	0.01		
GtB:							
Griter	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.03		
GtC2:							
Griter, eroded	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.03		
GU:							
Gullied land	85	Not rated		Not rated		Not rated	
ImA:							
Imogene	90	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Cutbanks cave	0.10	Sodium content	1.00
		Shrink-swell	0.50			Droughty	0.02
JsC:							
Jedd	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Gravel content	0.34
		Shrink-swell	0.50	Too clayey	0.03	Depth to bedrock	0.03
				Depth to soft bedrock	0.03		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
JsE:							
Jedd	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.46	Depth to bedrock	0.46
		Shrink-swell	0.50	Slope	0.16	Gravel content	0.34
		Slope	0.16	Cutbanks cave	0.10	Slope	0.16
				Too clayey	0.03		
KuB:							
Kurten	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.72		
		Shrink-swell	1.00	Cutbanks cave	0.10		
LeB:							
Leming	85	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
				Too clayey	0.03		
LkA:							
Luckenbach	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	0.50	Cutbanks cave	0.10		
LkB:							
Luckenbach	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	0.50	Cutbanks cave	0.10		
LuB:							
Luling	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.28		
LuC:							
Luling	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.28		
LuC2:							
Luling, eroded	100	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.28		
MaA:							
Mabank	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.03		
MeA:							
Meguin	80	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MfA:							
Meguin	80	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
MoB:							
Monteola	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
MoC:							
Monteola	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
NaA:							
Navasota	80	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Low strength	1.00	Flooding	0.80	Depth to saturated zone	0.48
		Depth to saturated zone	0.48	Too clayey	0.28		
NmB:							
Normangee	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		
NmC:							
Normangee	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		
NuC:							
Nusil	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.29
PaC:							
Padina	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.42
PbA:							
Papalote	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	0.50	Cutbanks cave	0.10		
PbB:							
Papalote	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	0.50	Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PkB:							
Pavelek	85	Very limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Low strength	1.00	Cutbanks cave	0.10	Too clayey	1.00
		Shrink-swell	0.50			Carbonate content	1.00
						Droughty	0.69
RhC:							
Rhymes	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.57
RoB:							
Rosanky	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.03		
RoC2:							
Rosanky, eroded	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.03		
RsB:							
Rosenbrock	85	Very limited		Very limited		Very limited	
		Low strength	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Shrink-swell	1.00	Too clayey	0.72		
RvA:							
Rutersville	85	Very limited		Somewhat limited		Not limited	
		Shrink-swell	1.00	Depth to saturated zone	0.90		
		Low strength	1.00	Cutbanks cave	0.10		
SaD:							
Sarnosa	85	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
ScC:							
Schattel	85	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Too clayey	0.28	Sodium content	1.00
		Shrink-swell	1.00	Cutbanks cave	0.10		
ShC:							
Shalba	85	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Low strength	1.00	Cutbanks cave	0.10	Droughty	0.99
		Shrink-swell	1.00				
SnC:							
Shiner	85	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
				Dense layer	0.50	Droughty	1.00
				Cutbanks cave	0.10	Carbonate content	1.00

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
SnE:							
Shiner	85	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Slope	0.04	Dense layer	0.50	Droughty	1.00
				Cutbanks cave	0.10	Carbonate content	1.00
				Slope	0.04	Slope	0.04
SoC:							
Shiro	85	Very limited		Somewhat limited		Somewhat limited	
		Shrink-swell	1.00	Depth to soft bedrock	0.15	Depth to bedrock	0.16
		Low strength	1.00	Cutbanks cave	0.10		
SsC:							
Silstid	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.06
SvD:							
Silvern	80	Not limited		Very limited		Very limited	
				Cutbanks cave	1.00	Droughty	1.00
						Gravel content	1.00
						Large stones content	0.54
SwA:							
Singleton	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.03		
SwC:							
Singleton	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Depth to bedrock	0.03
		Shrink-swell	1.00	Too clayey	0.03		
				Depth to soft bedrock	0.03		
SxB:							
Styx	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.01
				Depth to saturated zone	0.61		
SyC:							
Sunev	85	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Cutbanks cave	0.10	Carbonate content	1.00
SyE:							
Sunev	80	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Slope	0.63	Carbonate content	1.00
		Slope	0.63	Cutbanks cave	0.10	Slope	0.63
TbA:							
Tabor	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
TbB:							
Tabor	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		
TnA:							
Tinn	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Too clayey	0.50		
ToA:							
Tinn	90	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Cutbanks cave	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50		
TrB:							
Tordia	85	Very limited		Very limited		Very limited	
		Low strength	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Shrink-swell	1.00	Too clayey	0.50		
TtC:							
Tremona	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.11
				Depth to saturated zone	0.99		
				Too clayey	0.03		
W:							
Water	100	Not rated		Not rated		Not rated	
WaA:							
Waelder	85	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Flooding	0.60		
WeA:							
Waelder	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
				Flooding	0.80		
WsC:							
Weesatche	85	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
WwA:							
Wilson	95	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		
ZkB:							
Zack	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	1.00	Cutbanks cave	0.10		

Table 15.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Local roads and streets: Value	Shallow excavations: Rating class and limiting features	Shallow excavations: Value	Lawns and landscaping: Rating class and limiting features	Lawns and landscaping: Value
ZuB:							
Zulch	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		

Table 16.--Sewage Disposal

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AmB:					
Alum	100	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
ApC:					
Arenosa	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	0.08
ArA:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00		
ArB:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00		
AxB:					
Axtell	85	Very limited		Not limited	
		Slow water movement	1.00		
AxC:					
Axtell	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
AxE:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	0.04		
BnB:					
Benchley	85	Very limited		Not limited	
		Slow water movement	1.00		
BoA:					
Bosque	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
BpA:					
Bosque	55	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
Tinn	42	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
BrA:					
Branyon	85	Very limited		Not limited	
		Slow water movement	1.00		
BtB:					
Bryde	85	Very limited		Not limited	
		Slow water movement	1.00		
BuA:					
Buchel	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
BvA:					
Buchel	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
BwB:					
Burlewash	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	1.00		
BwC2:					
Burlewash, eroded	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32
BwE:					
Burlewash	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	0.04	Seepage	0.27

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CaB:					
Cadell	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to saturated zone	0.17
		Depth to saturated zone	1.00		
CbB:					
Carbengle	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Seepage	0.50
CbC:					
Carbengle	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Seepage	0.50
				Slope	0.32
CbC2:					
Carbengle, eroded	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Seepage	0.50
				Slope	0.32
CbE:					
Carbengle	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
		Slope	0.04	Seepage	0.50
ChA:					
Chazos	85	Very limited		Not limited	
		Slow water movement	1.00		
ChB:					
Chazos	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
CnB:					
Conquista	85	Very limited		Not limited	
		Slow water movement	1.00		
CnG:					
Conquista	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CoA:					
Cost	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
CpB:					
Coy	85	Very limited		Not limited	
		Slow water movement	1.00		
CrB:					
Crockett	85	Very limited		Not limited	
		Slow water movement	1.00		
CrC2:					
Crockett, eroded	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
CsB:					
Crockett	85	Very limited		Not limited	
		Slow water movement	1.00		
CsC2:					
Crockett, eroded	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
CuB:					
Cuero	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
		Depth to bedrock	0.11		
DeA:					
Degola	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
DfA:					
Degola	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
DmB:					
Dimebox	100	Very limited		Not limited	
		Slow water movement	1.00		

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
DyC2:					
Dreyer, eroded	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
DyE:					
Dreyer	85	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	0.04		
EcB:					
Ecleto	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
				Seepage	0.27
EcC:					
Ecleto	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
				Slope	0.32
				Seepage	0.27
EdB:					
Edge	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.08
EdC2:					
Edge, eroded	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
EdD3:					
Edge, severely eroded	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.92
EdE2:					
Edge	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
EgC:					
Edge	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
EgE:					
Edge	80	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	0.04		

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
EkB:					
Elmendorf	60	Very limited		Not limited	
		Slow water movement	1.00		
Denhawken	40	Very limited		Not limited	
		Slow water movement	1.00		
EkC:					
Elmendorf	60	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
Denhawken	40	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
EsB:					
Eloso	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.50
FnB:					
Flatonia	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.13
		Depth to bedrock	0.59		
FsB:					
Frelsburg	100	Very limited		Not limited	
		Slow water movement	1.00		
FsC:					
Frelsburg	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
GfA:					
Ganado	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
GhC:					
Gholson	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
				Slope	0.08
GkC:					
Gillett	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.08

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
GkF:					
Gillett	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.96		
GP:					
Pits	100	Not rated		Not rated	
GrB:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00		
GrC:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32
GtB:					
Griter	85	Very limited		Not limited	
		Slow water movement	1.00		
GtC2:					
Griter, eroded	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
GU:					
Gullied land	85	Not rated		Not rated	
ImA:					
Imogene	90	Very limited		Not limited	
		Slow water movement	1.00		
JsC:					
Jedd	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	1.00	Slope	0.32
JsE:					
Jedd	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	0.16		

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
KuB:					
Kurten	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
LeB:					
Leming	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
LkA:					
Luckenbach	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.50
LkB:					
Luckenbach	85	Very limited		Not limited	
		Slow water movement	1.00		
LuB:					
Luling	100	Very limited		Not limited	
		Slow water movement	1.00		
LuC:					
Luling	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
LuC2:					
Luling, eroded	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
MaA:					
Mabank	85	Very limited		Not limited	
		Slow water movement	1.00		
MeA:					
Meguin	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
MfA:					
Meguin	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
MoB:					
Monteola	85	Very limited		Not limited	
		Slow water movement	1.00		

Table 16.-- Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MoC:					
Monteola	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
NaA:					
Navasota	80	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Slow water movement	1.00	Flooding	1.00
		Ponding	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	1.00		
NmB:					
Normangee	85	Very limited		Not limited	
		Slow water movement	1.00		
NmC:					
Normangee	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
NuC:					
Nusil	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
				Slope	0.08
PaC:					
Padina	85	Somewhat limited		Very limited	
		Slow water movement	0.50	Seepage	1.00
				Slope	0.08
PbA:					
Papalote	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
PbB:					
Papalote	85	Very limited		Not limited	
		Slow water movement	1.00		
PkB:					
Pavelek	85	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.50

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
RhC:					
Rhymes	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
				Slope	0.08
RoB:					
Rosanky	85	Very limited		Not limited	
		Slow water movement	1.00		
		Depth to bedrock	0.01		
RoC2:					
Rosanky, eroded	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
		Depth to bedrock	0.27		
RsB:					
Rosenbrock	85	Very limited		Not limited	
		Slow water movement	1.00		
RvA:					
Rutersville	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.01
		Depth to saturated zone	1.00		
		Depth to bedrock	0.36		
SaD:					
Sarnosa	85	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
ScC:					
Schattel	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.32
ShC:					
Shalba	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
				Slope	0.08
SnC:					
Shiner	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
				Seepage	0.50
				Slope	0.32

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SnE:					
Shiner	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.04	Slope	1.00
				Seepage	0.50
SoC:					
Shiro	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.08
SsC:					
Silstid	85	Somewhat limited		Very limited	
		Slow water movement	0.50	Seepage	1.00
				Slope	0.08
SvD:					
Silvern	80	Somewhat limited		Very limited	
		Slow water movement	0.50	Seepage	1.00
				Slope	0.68
SwA:					
Singleton	85	Very limited		Not limited	
		Slow water movement	1.00		
		Depth to bedrock	0.27		
SwC:					
Singleton	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.08
SxB:					
Styx	85	Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Seepage	1.00
		Slow water movement	0.50		
SyC:					
Sunev	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
				Slope	0.32
SyE:					
Sunev	80	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
TbA:					
Tabor	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.50
TbB:					
Tabor	90	Very limited		Not limited	
		Slow water movement	1.00		
TnA:					
Tinn	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
ToA:					
Tinn	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
TrB:					
Tordia	85	Very limited		Not limited	
		Slow water movement	1.00		
TtC:					
Tremona	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.17
				Slope	0.08
W:					
Water	100	Not rated		Not rated	
WaA:					
Waelder	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
WeA:					
Waelder	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
WsC:					
Weesatche	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
				Slope	0.32

Table 16.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
WwA:					
Wilson	95	Very limited		Not limited	
		Slow water movement	1.00		
ZkB:					
Zack	85	Very limited		Not limited	
		Slow water movement	1.00		
ZuB:					
Zulch	85	Very limited		Not limited	
		Slow water movement	1.00		

Table 17.--Landfills

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Trench sanitary landfill: Value	Area sanitary landfill: Rating class and limiting features	Area sanitary landfill: Value	Daily cover for landfill: Rating class and limiting features	Daily cover for landfill: Value
AmB:							
Alum	100	Somewhat limited		Very limited		Somewhat limited	
		Too sandy	0.50	Seepage	1.00	Seepage	0.50
						Too sandy	0.50
ApC:							
Arenosa	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
ArA:							
Arol	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
ArB:							
Arol	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
AxB:							
Axtell	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
AxC:							
Axtell	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
AxE:							
Axtell	85	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Slope	0.04
BnB:							
Benchley	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
BoA:							
Bosque	85	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BpA:							
Bosque	55	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Too clayey	0.50
		Too clayey	0.50				
Tinn	42	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
BrA:							
Branyon	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
BtB:							
Bryde	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
BuA:							
Buchel	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
BvA:							
Buchel	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
BwB:							
Burlewash	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
BwC2:							
Burlewash, eroded	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
BwE:							
Burlewash	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	0.04
CaB:							
Cadell	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.84	Depth to saturated zone	0.17	Hard to compact	1.00
		Too clayey	0.50			Too clayey	0.50
						Depth to saturated zone	0.44

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
CbB:							
Carbengle	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Carbonate content	1.00
						Too clayey	0.50
CbC:							
Carbengle	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Carbonate content	1.00
						Too clayey	0.50
CbC2:							
Carbengle, eroded	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Carbonate content	1.00
						Too clayey	0.50
CbE:							
Carbengle	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Slope	0.04	Carbonate content	1.00
		Slope	0.04			Too clayey	0.50
						Slope	0.04
ChA:							
Chazos	85	Not limited		Not limited		Very limited	
						Too clayey	1.00
						Hard to compact	1.00
ChB:							
Chazos	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
CnB:							
Conquista	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.01
CnG:							
Conquista	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.01
CoA:							
Cost	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Sodium content	1.00
		Sodium content	1.00			Salinity	1.00
		Too sandy	1.00			Depth to saturated zone	0.86
		Salinity	1.00				

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
CpB:							
Coy	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
CrB:							
Crockett	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
CrC2:							
Crockett, eroded	90	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
CsB:							
Crockett	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
CsC2:							
Crockett, eroded	80	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
CuB:							
Cuero	85	Very limited		Not limited		Not limited	
		Depth to bedrock	1.00				
DeA:							
Degola	90	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
DfA:							
Degola	85	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
DmB:							
Dimebox	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
DyC2:							
Dreyer, eroded	80	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
DyE:							
Dreyer	85	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Slope	0.04

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
EcB:							
Ecleto	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
EcC:							
Ecleto	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
EdB:							
Edge	90	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
EdC2:							
Edge, eroded	100	Not limited		Not limited		Very limited	
						Hard to compact	1.00
						Too clayey	0.50
EdD3:							
Edge, severely eroded	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
EdE2:							
Edge	80	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
EgC:							
Edge	100	Not limited		Not limited		Very limited	
						Too clayey	1.00
						Hard to compact	1.00
EgE:							
Edge	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Hard to compact	1.00
						Too clayey	0.50
						Slope	0.04
EkB:							
Elmendorf	60	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
		Sodium content	1.00			Hard to compact	1.00
						Sodium content	1.00
Denhawken	40	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
EkC:							
Elmendorf	60	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
		Sodium content	1.00			Hard to compact	1.00
						Sodium content	1.00
Denhawken	40	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
EsB:							
Eloso	90	Not limited		Not limited		Not limited	
FnB:							
Flatonia	85	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	0.14	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
						Depth to bedrock	0.14
FsB:							
Frelsburg	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
FsC:							
Frelsburg	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
GfA:							
Ganado	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
GhC:							
Gholson	85	Not limited		Not limited		Not limited	
GkC:							
Gillett	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
GkF:							
Gillett	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Slope	0.96
GP:							
Pits	100	Not rated		Not rated		Not rated	
GrB:							
Greenvine	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Trench sanitary landfill: Value	Area sanitary landfill: Rating class and limiting features	Area sanitary landfill: Value	Daily cover for landfill: Rating class and limiting features	Daily cover for landfill: Value
GrC:							
Greenvine	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
GtB:							
Griter	85	Not limited		Not limited		Somewhat limited	
						Too clayey	0.50
GtC2:							
Griter, eroded	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
GU:							
Gullied land	85	Not rated		Not rated		Not rated	
ImA:							
Imogene	90	Very limited		Not limited		Very limited	
		Sodium content	1.00			Sodium content	1.00
		Too clayey	0.50				
JsC:							
Jedd	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
JsE:							
Jedd	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.16	Too clayey	1.00
		Slope	0.16			Hard to compact	1.00
						Slope	0.16
KuB:							
Kurten	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
LeB:							
Leming	85	Somewhat limited		Very limited		Somewhat limited	
		Too clayey	0.50	Seepage	1.00	Too clayey	0.50
LkA:							
Luckenbach	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
LkB:							
Luckenbach	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
LuB:							
Luling--------------	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
LuC:							
Luling--------------	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
LuC2:							
Luling, eroded------	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
MaA:							
Mabank--------------	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
MeA:							
Meguin--------------	80	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
MfA:							
Meguin--------------	80	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
MoB:							
Monteola------------	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
MoC:							
Monteola------------	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
NaA:							
Navasota------------	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Too clayey	1.00
		Ponding	1.00	Depth to saturated zone	0.94	Hard to compact	1.00
		Too clayey	1.00			Depth to saturated zone	0.96
NmB:							
Normangee-----------	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
NmC:							
Normangee	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
NuC:							
Nusil	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Seepage	1.00	Too sandy	1.00
PaC:							
Padina	85	Somewhat limited		Very limited		Very limited	
		Too sandy	0.50	Seepage	1.00	Seepage	1.00
						Too sandy	0.50
PbA:							
Papalote	85	Not limited		Not limited		Somewhat limited	
						Too clayey	0.50
PbB:							
Papalote	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
PkB:							
Pavelek	85	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	0.50	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
RhC:							
Rhymes	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Seepage	1.00	Too sandy	1.00
RoB:							
Rosanky	85	Very limited		Not limited		Somewhat limited	
		Depth to bedrock	1.00			Too clayey	0.50
		Too clayey	0.50				
RoC2:							
Rosanky, eroded	85	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
RsB:							
Rosenbrock	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
RvA:							
Rutersville	85	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	0.01	Hard to compact	1.00
		Depth to saturated zone	0.24			Depth to saturated zone	0.02
						Depth to bedrock	0.01

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
SaD:							
Sarnosa	85	Very limited		Not limited		Not limited	
		Seepage	1.00				
ScC:							
Schattel	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
		Sodium content	1.00			Hard to compact	1.00
						Sodium content	1.00
ShC:							
Shalba	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
SnC:							
Shiner	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Carbonate content	1.00
SnE:							
Shiner	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.04	Slope	0.04	Carbonate content	1.00
						Slope	0.04
SoC:							
Shiro	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
SsC:							
Silstid	85	Not limited		Very limited		Not limited	
				Seepage	1.00		
SvD:							
Silvern	80	Somewhat limited		Very limited		Very limited	
		Too sandy	0.50	Seepage	1.00	Seepage	1.00
						Gravel content	1.00
						Too sandy	0.50
SwA:							
Singleton	85	Very limited		Not limited		Not limited	
		Depth to bedrock	1.00				
SwC:							
Singleton	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
SxB:							
Styx	85	Not limited		Very limited		Not limited	
				Seepage	1.00		
SyC:							
Sunev	85	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Carbonate content	1.00
						Too clayey	0.50
SyE:							
Sunev	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Carbonate content	1.00
						Slope	0.63
TbA:							
Tabor	90	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
TbB:							
Tabor	90	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
TnA:							
Tinn	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
ToA:							
Tinn	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
TrB:							
Tordia	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
TtC:							
Tremona	85	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.84	Seepage	1.00	Hard to compact	1.00
		Too clayey	0.50	Depth to saturated zone	0.17	Too clayey	0.50
						Depth to saturated zone	0.44
W:							
Water	100	Not rated		Not rated		Not rated	
WaA:							
Waelder	85	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Seepage	1.00	Seepage	1.00	Too sandy	0.50
		Too sandy	0.50				

Table 17.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WeA:							
Waelder	85	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Seepage	1.00	Seepage	1.00		
WsC:							
Weesatche	85	Not limited		Not limited		Not limited	
WwA:							
Wilson	95	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
ZkB:							
Zack	85	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
ZuB:							
Zulch	85	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Too clayey	1.00
						Hard to compact	1.00

Table 18.-- Disposal of Manure, Food-Processing Waste, and Sewage Sludge

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
AmB:					
Alum	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Too acid	0.01	Too acid	0.03
ApC:					
Arenosa	85	Very limited		Very limited	
		Filtering capacity	0.99	Filtering capacity	0.99
		Droughty	0.62	Too acid	0.77
		Leaching	0.45	Droughty	0.62
		Too acid	0.22		
ArA:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Droughty	0.55	Low adsorption	1.00
		Runoff	0.40	Droughty	0.55
		Depth to bedrock	0.20	Too acid	0.42
		Sodium content	0.18	Depth to bedrock	0.20
ArB:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Low adsorption	1.00
		Sodium content	0.18	Too acid	0.42
		Droughty	0.18	Sodium content	0.18
		Too acid	0.11	Droughty	0.18
AxB:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Too acid	0.42
		Too acid	0.11		
AxC:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Too acid	0.42
		Too acid	0.11		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AxE:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Too acid	0.42
		Too acid	0.11	Slope	0.04
		Slope	0.04		
BnB:					
Benchley	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
BoA:					
Bosque	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
BpA:					
Bosque	55	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
Tinn	42	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	1.00	Flooding	1.00
		Runoff	0.40		
BrA:					
Branyon	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
BtB:					
Bryde	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Sodium content	0.32	Sodium content	0.32
BuA:					
Buchel	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	0.60	Flooding	1.00
		Runoff	0.40	Sodium content	0.08
		Sodium content	0.08		
BvA:					
Buchel	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	1.00	Flooding	1.00
		Runoff	0.40	Sodium content	0.08
		Sodium content	0.08		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
BwB:					
Burlewash	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Droughty	0.95	Low adsorption	1.00
		Depth to bedrock	0.65	Droughty	0.95
		Runoff	0.40	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.65
BwC2:					
Burlewash, eroded	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Droughty	0.92	Low adsorption	1.00
		Depth to bedrock	0.54	Droughty	0.92
		Runoff	0.40	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.54
BwE:					
Burlewash	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Droughty	0.97	Low adsorption	1.00
		Depth to bedrock	0.65	Droughty	0.97
		Runoff	0.40	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.65
CaB:					
Cadell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Depth to saturated zone	0.84	Depth to saturated zone	0.84
		Runoff	0.40	Sodium content	0.02
		Sodium content	0.02		
CbB:					
Carbengle	90	Somewhat limited		Very limited	
		Depth to bedrock	0.10	Low adsorption	1.00
				Depth to bedrock	0.10
CbC:					
Carbengle	90	Somewhat limited		Very limited	
		Depth to bedrock	0.01	Low adsorption	1.00
				Depth to bedrock	0.01
CbC2:					
Carbengle, eroded	90	Somewhat limited		Very limited	
		Depth to bedrock	0.90	Low adsorption	1.00
		Droughty	0.57	Depth to bedrock	0.90
				Droughty	0.57

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
CbE:					
Carbengle-----------	85	Somewhat limited		Very limited	
		Depth to bedrock	0.65	Low adsorption	1.00
		Droughty	0.17	Depth to bedrock	0.65
		Slope	0.04	Droughty	0.17
				Slope	0.04
ChA:					
Chazos--------------	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
ChB:					
Chazos--------------	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
CnB:					
Conquista-----------	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Dense layer	1.00	Sodium content	0.08
		Runoff	0.40		
		Sodium content	0.08		
		Salinity	0.01		
CnG:					
Conquista-----------	85	Very limited		Very limited	
		Slope	1.00	Slow water movement	1.00
		Slow water movement	1.00	Slope	1.00
		Dense layer	1.00	Sodium content	0.08
		Runoff	0.40		
		Sodium content	0.08		
CoA:					
Cost----------------	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Salinity	1.00	Salinity	1.00
		Sodium content	1.00	Sodium content	1.00
		Droughty	1.00	Flooding	1.00
		Depth to saturated zone	0.99	Droughty	1.00
CpB:					
Coy-----------------	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.02
		Sodium content	0.02		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
CrB:					
Crockett------------	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.32
		Sodium content	0.32		
CrC2:					
Crockett, eroded----	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.32
		Sodium content	0.32		
CsB:					
Crockett------------	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.32
		Sodium content	0.32		
CsC2:					
Crockett, eroded----	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.32
		Sodium content	0.32		
CuB:					
Cuero---------------	85	Not limited		Very limited	
				Low adsorption	1.00
DeA:					
Degola--------------	90	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Salinity	0.01		
DfA:					
Degola--------------	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
DmB:					
Dimebox-------------	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Too acid	0.31
		Too acid	0.08		
DyC2:					
Dreyer, eroded------	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
DyE:					
Dreyer	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Slope	0.04
		Slope	0.04		
EcB:					
Ecleto	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Low adsorption	1.00
		Droughty	0.99	Slow water movement	1.00
		Runoff	0.40	Droughty	0.99
		Sodium content	0.08	Sodium content	0.08
EcC:					
Ecleto	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Low adsorption	1.00
		Droughty	0.99	Slow water movement	1.00
		Runoff	0.40	Droughty	0.99
		Sodium content	0.08	Sodium content	0.08
EdB:					
Edge	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
EdC2:					
Edge, eroded	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
EdD3:					
Edge, severely eroded	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
EdE2:					
Edge	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
EgC:					
Edge	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
EgE:					
Edge	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Slope	0.04
		Slope	0.04		
EkB:					
Elmendorf	60	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.02
		Sodium content	0.02		
Denhawken	40	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.32
		Sodium content	0.32		
EkC:					
Elmendorf	60	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.32
		Sodium content	0.32		
Denhawken	40	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.02
		Sodium content	0.02		
EsB:					
Eloso	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
FnB:					
Flatonia	85	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Runoff	0.40	Slow water movement	1.00
FsB:					
Frelsburg	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.18
		Sodium content	0.18		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
FsC:					
Frelsburg	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.18
		Sodium content	0.18		
GfA:					
Ganado	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	1.00	Flooding	1.00
		Runoff	0.40		
GhC:					
Gholson	85	Not limited		Not limited	
GkC:					
Gillett	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Dense layer	1.00	Sodium content	0.18
		Runoff	0.40	Depth to bedrock	0.16
		Sodium content	0.18	Shallow to densic materials	0.15
		Depth to bedrock	0.16	Droughty	0.08
GkF:					
Gillett	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Large stones on the surface	1.00	Large stones on the surface	1.00
		Slope	0.96	Slope	0.96
		Runoff	0.40	Sodium content	0.18
		Sodium content	0.18	Depth to bedrock	0.16
GP:					
Pits	100	Not rated		Not rated	
GrB:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Low adsorption	1.00
		Depth to bedrock	0.01	Depth to bedrock	0.01
		Droughty	0.01	Droughty	0.01
GrC:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Low adsorption	1.00
		Depth to bedrock	0.01	Depth to bedrock	0.01
		Droughty	0.01	Droughty	0.01

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
GtB:					
Griter	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
GtC2:					
Griter, eroded	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
GU:					
Gullied land	85	Not rated		Not rated	
ImA:					
Imogene	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Sodium content	1.00	Sodium content	1.00
		Salinity	0.78		
JsC:					
Jedd	85	Somewhat limited		Very limited	
		Slow water movement	0.50	Low adsorption	1.00
		Droughty	0.16	Slow water movement	0.37
		Depth to bedrock	0.03	Droughty	0.16
				Depth to bedrock	0.03
JsE:					
Jedd	85	Somewhat limited		Very limited	
		Droughty	0.74	Low adsorption	1.00
		Slow water movement	0.50	Droughty	0.74
		Depth to bedrock	0.46	Depth to bedrock	0.46
		Slope	0.16	Slow water movement	0.37
				Slope	0.16
KuB:					
Kurten	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
LeB:					
Leming	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
LkA:					
Luckenbach	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slow water movement	0.37

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LkB:					
Luckenbach	85	Somewhat limited Slow water movement	 0.50	Somewhat limited Slow water movement	 0.37
LuB:					
Luling	100	Very limited Slow water movement Runoff	 1.00 0.40	Very limited Slow water movement	 1.00
LuC:					
Luling	100	Very limited Slow water movement Runoff	 1.00 0.40	Very limited Slow water movement	 1.00
LuC2:					
Luling, eroded	100	Very limited Slow water movement Runoff	 1.00 0.40	Very limited Slow water movement	 1.00
MaA:					
Mabank	85	Very limited Slow water movement Runoff Sodium content	 1.00 0.40 0.18	Very limited Slow water movement Sodium content	 1.00 0.18
MeA:					
Meguin	80	Somewhat limited Flooding	 0.60	Very limited Flooding	 1.00
MfA:					
Meguin	80	Very limited Flooding	 1.00	Very limited Flooding	 1.00
MoB:					
Monteola	85	Very limited Slow water movement Runoff	 1.00 0.40	Very limited Slow water movement	 1.00
MoC:					
Monteola	85	Very limited Slow water movement Runoff	 1.00 0.40	Very limited Slow water movement	 1.00

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
NaA:					
Navasota	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	1.00
		Runoff	0.40		
NmB:					
Normangee	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.18
		Sodium content	0.18		
		Salinity	0.01		
NmC:					
Normangee	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.18
		Sodium content	0.18		
		Salinity	0.01		
NuC:					
Nusil	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Leaching	0.45		
PaC:					
Padina	85	Very limited		Very limited	
		Filtering capacity	0.99	Filtering capacity	0.99
PbA:					
Papalote	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
PbB:					
Papalote	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
PkB:					
Pavelek	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Low adsorption	1.00
		Droughty	1.00	Droughty	1.00
		Runoff	0.40	Slow water movement	1.00
RhC:					
Rhymes	85	Very limited		Very limited	
		Filtering capacity	0.99	Filtering capacity	0.99
		Slow water movement	0.50	Slow water movement	0.37
		Leaching	0.45		
RoB:					
Rosanky	85	Somewhat limited		Very limited	
		Slow water movement	0.50	Low adsorption	1.00
		Too acid	0.11	Too acid	0.42
				Slow water movement	0.37
RoC2:					
Rosanky, eroded	85	Somewhat limited		Very limited	
		Slow water movement	0.50	Low adsorption	1.00
		Too acid	0.11	Too acid	0.42
				Slow water movement	0.37
RsB:					
Rosenbrock	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
RvA:					
Rutersville	85	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Filtering capacity	0.99	Slow water movement	1.00
		Depth to saturated zone	0.24	Filtering capacity	0.99
		Sodium content	0.02	Depth to saturated zone	0.24
		Too acid	0.02	Too acid	0.07

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
SaD:					
Sarnosa	85	Not limited		Not limited	
ScC:					
Schattel	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Sodium content	0.08	Sodium content	0.08
		Salinity	0.01		
ShC:					
Shalba	85	Very limited		Very limited	
		Slow water movement	1.00	Droughty	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Runoff	0.40	Low adsorption	1.00
		Too acid	0.22	Too acid	0.77
SnC:					
Shiner	85	Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00
SnE:					
Shiner	85	Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Slope	0.04	Slope	0.04
SoC:					
Shiro	85	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Droughty	0.66	Slow water movement	1.00
		Depth to bedrock	0.16	Droughty	0.66
		Too acid	0.11	Too acid	0.42
				Depth to bedrock	0.16
SsC:					
Silstid	85	Very limited		Very limited	
		Filtering capacity	0.99	Filtering capacity	0.99
SvD:					
Silvern	80	Very limited		Very limited	
		Droughty	1.00	Droughty	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Leaching	0.45	Too acid	0.42
		Too acid	0.11	Cobble content	0.04
		Cobble content	0.04		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
SwA:					
Singleton	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Low adsorption	1.00
		Too acid	0.11	Too acid	0.42
SwC:					
Singleton	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Low adsorption	1.00
		Droughty	0.28	Too acid	0.42
		Too acid	0.11	Droughty	0.28
		Depth to bedrock	0.03	Depth to bedrock	0.03
SxB:					
Styx	85	Somewhat limited		Somewhat limited	
		Too acid	0.02	Too acid	0.07
SyC:					
Sunev	85	Not limited		Not limited	
SyE:					
Sunev	80	Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63
TbA:					
Tabor	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Too acid	0.42
		Too acid	0.11	Sodium content	0.02
		Sodium content	0.02		
TbB:					
Tabor	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Too acid	0.42
		Too acid	0.11	Sodium content	0.02
		Sodium content	0.02		
TnA:					
Tinn	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	0.60	Flooding	1.00
		Runoff	0.40		
ToA:					
Tinn	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	1.00	Flooding	1.00
		Runoff	0.40		

Table 18.--Disposal of Manure, Food-Processing Waste, and Sewage Sludge--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
TrB:					
Tordia	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		
TtC:					
Tremona	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Depth to saturated zone	0.84	Depth to saturated zone	0.84
		Too acid	0.11	Too acid	0.42
W:					
Water	100	Not rated		Not rated	
WaA:					
Waelder	85	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
WeA:					
Waelder	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
WsC:					
Weesatche	85	Not limited		Not limited	
WwA:					
Wilson	95	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.18
		Sodium content	0.18		
ZkB:					
Zack	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Too acid	0.42
		Too acid	0.11		
ZuB:					
Zulch	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40		

Table 19.--Disposal of wastewater by irrigation and overland flow

(The information in this table indicates the dominant soil condition but does not Eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
AmB:					
Alum	100	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too acid	0.03	Too acid	0.03
ApC:					
Arenosa	85	Very limited		Very limited	
		Filtering capacity	0.99	Seepage	1.00
		Too acid	0.77	Too acid	0.77
		Droughty	0.62		
ArA:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Droughty	0.55	Seepage	1.00
		Too acid	0.42	Too level	0.50
		Depth to bedrock	0.20	Too acid	0.42
		Sodium content	0.18	Sodium content	0.18
ArB:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too acid	0.42	Seepage	1.00
		Sodium content	0.18	Too acid	0.42
		Droughty	0.18	Sodium content	0.18
		Depth to bedrock	0.01		
AxB:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too acid	0.42	Too acid	0.42
AxC:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too acid	0.42	Too acid	0.42
		Too steep	0.08		
AxE:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	1.00	Too steep	0.50
		Too acid	0.42	Too acid	0.42
		Too steep	0.22		

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
BnB:					
Benchley	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
BoA:					
Bosque	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Too level	0.50
BpA:					
Bosque	55	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Too level	0.50
Tinn	42	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
		Flooding	1.00	Too level	0.50
BrA:					
Branyon	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too level	0.50
BtB:					
Bryde	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Sodium content	0.32	Sodium content	0.32
BuA:					
Buchel	85	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
		Flooding	0.60	Too level	0.50
		Sodium content	0.08	Sodium content	0.08
BvA:					
Buchel	85	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
		Flooding	1.00	Too level	0.50
		Sodium content	0.08	Sodium content	0.08
BwB:					
Burlewash	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Droughty	0.95	Seepage	1.00
		Too acid	0.91	Too acid	0.91
		Depth to bedrock	0.65		

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
BwC2:					
Burlewash, eroded	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Droughty	0.92	Seepage	1.00
		Too acid	0.91	Too acid	0.91
		Depth to bedrock	0.54		
		Too steep	0.08		
BwE:					
Burlewash	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too steep	1.00	Seepage	1.00
		Droughty	0.97	Too acid	0.91
		Too acid	0.91	Too steep	0.50
		Depth to bedrock	0.65		
CaB:					
Cadell	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Depth to saturated zone	0.84	Depth to saturated zone	0.84
		Sodium content	0.02	Sodium content	0.02
CbB:					
Carbengle	90	Somewhat limited		Very limited	
		Depth to bedrock	0.10	Depth to bedrock	1.00
				Seepage	1.00
CbC:					
Carbengle	90	Somewhat limited		Very limited	
		Too steep	0.08	Depth to bedrock	1.00
		Depth to bedrock	0.01	Seepage	1.00
CbC2:					
Carbengle, eroded	90	Somewhat limited		Very limited	
		Depth to bedrock	0.90	Depth to bedrock	1.00
		Droughty	0.57	Seepage	1.00
		Too steep	0.08		
CbE:					
Carbengle	85	Very limited		Very limited	
		Too steep	1.00	Depth to bedrock	1.00
		Depth to bedrock	0.65	Seepage	1.00
		Too steep	0.22	Too steep	0.50
		Droughty	0.17		
ChA:					
Chazos	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
				Too level	0.50

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
ChB:					
Chazos	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
CnB:					
Conquista	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Sodium content	0.08
		Sodium content	0.08		
CnG:					
Conquista	85	Very limited		Very limited	
		Slow water movement	1.00	Too steep	1.00
		Too steep	1.00	Sodium content	0.08
		Too steep	1.00		
		Sodium content	0.08		
CoA:					
Cost	85	Very limited		Very limited	
		Slow water movement	1.00	Sodium content	1.00
		Salinity	1.00	Flooding	1.00
		Sodium content	1.00	Seepage	1.00
		Droughty	1.00	Salinity	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.99
CpB:					
Coy	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.62
		Sodium content	0.02	Sodium content	0.02
CrB:					
Crockett	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Sodium content	0.32	Sodium content	0.32
CrC2:					
Crockett, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Sodium content	0.32	Sodium content	0.32
		Too steep	0.08		
CsB:					
Crockett	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Sodium content	0.32	Sodium content	0.32

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
CsC2:					
Crockett, eroded	80	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Sodium content	0.32	Sodium content	0.32
		Too steep	0.08		
CuB:					
Cuero	85	Not limited		Very limited	
				Seepage	1.00
DeA:					
Degola	90	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
				Seepage	1.00
				Too level	0.50
DfA:					
Degola	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Too level	0.50
DmB:					
Dimebox	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.31
		Too acid	0.31		
DyC2:					
Dreyer, eroded	80	Very limited		Not limited	
		Slow water movement	1.00		
		Too steep	0.08		
DyE:					
Dreyer	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep	0.50
		Too steep	1.00		
		Too steep	0.22		
EcB:					
Ecleto	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	0.62
		Droughty	0.99	Sodium content	0.08
		Sodium content	0.08		

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
EcC:					
Ecleto	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	0.62
		Droughty	0.99	Sodium content	0.08
		Too steep	0.08		
		Sodium content	0.08		
EdB:					
Edge	90	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
EdC2:					
Edge, eroded	100	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	0.08		
EdD3:					
Edge, severely eroded	100	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	0.68		
EdE2:					
Edge	80	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	0.08		
EgC:					
Edge	100	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	0.08		
EgE:					
Edge	80	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	1.00	Too steep	0.50
		Too steep	0.22		
EkB:					
Elmendorf	60	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.62
		Sodium content	0.02	Sodium content	0.02
Denhawken	40	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.62
		Sodium content	0.32	Sodium content	0.32

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
EkC:					
Elmendorf	60	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.62
		Sodium content	0.32	Sodium content	0.32
		Too steep	0.08		
Denhawken	40	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.62
		Too steep	0.08	Sodium content	0.02
		Sodium content	0.02		
EsB:					
Eloso	90	Very limited		Not limited	
		Slow water movement	1.00		
FnB:					
Flatonia	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.62
				Depth to bedrock	0.14
FsB:					
Frelsburg	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Sodium content	0.18
		Sodium content	0.18		
FsC:					
Frelsburg	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Sodium content	0.18
		Sodium content	0.18		
		Too steep	0.08		
GfA:					
Ganado	85	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
		Flooding	1.00	Too level	0.50
GhC:					
Gholson	85	Not limited		Very limited	
				Seepage	1.00
GkC:					
Gillett	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Sodium content	0.18	Seepage	1.00
		Depth to bedrock	0.16	Sodium content	0.18
		Droughty	0.08		

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
GkF:					
Gillett	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Large stones on the surface	1.00	Seepage	1.00
		Too steep	1.00	Too steep	1.00
		Too steep	0.98	Sodium content	0.18
		Sodium content	0.18		
GP:					
Pits	100	Not rated		Not rated	
GrB:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	0.01		
		Droughty	0.01		
GrC:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too steep	0.08		
		Depth to bedrock	0.01		
		Droughty	0.01		
GtB:					
Griter	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
GtC2:					
Griter, eroded	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	0.08		
GU:					
Gullied land	85	Not rated		Not rated	
ImA:					
Imogene	90	Very limited		Very limited	
		Slow water movement	1.00	Sodium content	1.00
		Sodium content	1.00	Seepage	1.00
				Too level	0.50
JsC:					
Jedd	85	Somewhat limited		Very limited	
		Slow water movement	0.37	Depth to bedrock	1.00
		Droughty	0.16	Seepage	1.00
		Too steep	0.08		
		Depth to bedrock	0.03		

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
JsE:					
Jedd	85	Very limited		Very limited	
		Too steep	1.00	Depth to bedrock	1.00
		Droughty	0.74	Seepage	1.00
		Depth to bedrock	0.46	Too steep	0.78
		Too steep	0.40		
		Slow water movement	0.37		
KuB:					
Kurten	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	0.08		
LeB:					
Leming	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
LkA:					
Luckenbach	85	Somewhat limited		Very limited	
		Slow water movement	0.37	Seepage	1.00
				Too level	0.50
LkB:					
Luckenbach	85	Somewhat limited		Very limited	
		Slow water movement	0.37	Seepage	1.00
LuB:					
Luling	100	Very limited		Not limited	
		Slow water movement	1.00		
LuC:					
Luling	100	Very limited		Not limited	
		Slow water movement	1.00		
		Too steep	0.08		
LuC2:					
Luling, eroded	100	Very limited		Not limited	
		Slow water movement	1.00		
		Too steep	0.08		
MaA:					
Mabank	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Sodium content	0.18	Too level	0.50
				Sodium content	0.18

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
MeA:					
Meguin	80	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
				Seepage	1.00
				Too level	0.50
MfA:					
Meguin	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Too level	0.50
MoB:					
Monteola	85	Very limited		Not limited	
		Slow water movement	1.00		
MoC:					
Monteola	85	Very limited		Not limited	
		Slow water movement	1.00		
		Too steep	0.08		
NaA:					
Navasota	80	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Too level	0.50
NmB:					
Normangee	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Sodium content	0.18
		Sodium content	0.18		
NmC:					
Normangee	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Sodium content	0.18
		Sodium content	0.18		
		Too steep	0.08		
NuC:					
Nusil	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Filtering capacity	0.99		
PaC:					
Padina	85	Very limited		Very limited	
		Filtering capacity	0.99	Seepage	1.00

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
PbA:					
Papalote	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
				Too level	0.50
PbB:					
Papalote	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
PkB:					
Pavelek	85	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Droughty	1.00		
		Slow water movement	1.00		
RhC:					
Rhymes	85	Very limited		Very limited	
		Filtering capacity	0.99	Seepage	1.00
		Slow water movement	0.37		
RoB:					
Rosanky	85	Somewhat limited		Very limited	
		Too acid	0.42	Seepage	1.00
		Slow water movement	0.37	Too acid	0.42
RoC2:					
Rosanky, eroded	85	Somewhat limited		Very limited	
		Too acid	0.42	Seepage	1.00
		Slow water movement	0.37	Too acid	0.42
		Too steep	0.08		
RsB:					
Rosenbrock	85	Very limited		Not limited	
		Slow water movement	1.00		
RvA:					
Rutersville	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Filtering capacity	0.99	Too level	0.50
		Depth to saturated zone	0.24	Depth to saturated zone	0.24
		Too acid	0.07	Too acid	0.07
		Sodium content	0.02	Sodium content	0.02

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
SaD:					
Sarnosa	85	Somewhat limited		Very limited	
		Too steep	0.92	Seepage	1.00
		Too steep	0.02	Too steep	0.06
ScC:					
Schattel	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too steep	0.08	Sodium content	0.08
		Sodium content	0.08		
ShC:					
Shalba	85	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	1.00
		Depth to bedrock	1.00	Too acid	0.77
		Too acid	0.77		
SnC:					
Shiner	85	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00
		Too steep	0.08		
SnE:					
Shiner	85	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00
		Too steep	1.00	Too steep	0.50
		Too steep	0.22		
SoC:					
Shiro	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Droughty	0.66	Depth to bedrock	1.00
		Too acid	0.42	Too acid	0.42
		Depth to bedrock	0.16		
SsC:					
Silstid	85	Very limited		Very limited	
		Filtering capacity	0.99	Seepage	1.00
SvD:					
Silvern	80	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Filtering capacity	0.99	Too acid	0.42
		Too acid	0.42	Cobble content	0.04
		Too steep	0.32		
		Cobble content	0.04		

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
SwA:					
Singleton-----------	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too acid	0.42	Too level	0.50
				Too acid	0.42
SwC:					
Singleton-----------	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too acid	0.42	Seepage	1.00
		Droughty	0.28	Too acid	0.42
		Depth to bedrock	0.03		
SxB:					
Styx----------------	85	Somewhat limited		Very limited	
		Too acid	0.07	Seepage	1.00
				Too acid	0.07
SyC:					
Sunev---------------	85	Somewhat limited		Very limited	
		Too steep	0.08	Seepage	1.00
SyE:					
Sunev---------------	80	Very limited		Very limited	
		Too steep	1.00	Seepage	1.00
		Too steep	0.78	Too steep	1.00
TbA:					
Tabor---------------	90	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too acid	0.42	Too level	0.50
		Sodium content	0.02	Too acid	0.42
				Sodium content	0.02
TbB:					
Tabor---------------	90	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too acid	0.42	Too acid	0.42
		Sodium content	0.02	Sodium content	0.02
TnA:					
Tinn----------------	85	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
		Flooding	0.60	Too level	0.50
ToA:					
Tinn----------------	90	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
		Flooding	1.00	Too level	0.50

Table 19.--Disposal of wastewater by irrigation and overland flow--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
TrB:					
Tordia	85	Very limited		Not limited	
		Slow water movement	1.00		
TtC:					
Tremona	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Filtering capacity	0.99	Depth to saturated zone	0.84
		Depth to saturated zone	0.84	Too acid	0.42
		Too acid	0.42		
W:					
Water	100	Not rated		Not rated	
WaA:					
Waelder	85	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
				Seepage	1.00
				Too level	0.50
WeA:					
Waelder	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Too level	0.50
WsC:					
Weesatche	85	Somewhat limited		Very limited	
		Too steep	0.08	Seepage	1.00
WwA:					
Wilson	95	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.62
		Sodium content	0.18	Too level	0.50
				Sodium content	0.18
ZkB:					
Zack	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Too acid	0.42	Too acid	0.42
ZuB:					
Zulch	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AmB:					
Alum	100	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
				Too acid	0.03
ApC:					
Arenosa	85	Not limited		Very limited	
				Filtering capacity	0.99
				Too acid	0.77
ArA:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
				Too acid	0.42
				Sodium content	0.18
ArB:					
Arol	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
				Too acid	0.42
				Sodium content	0.18
AxB:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too acid	0.42
AxC:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too acid	0.42
				Too steep	0.08
AxE:					
Axtell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Slope	1.00	Too steep	1.00
				Too steep	0.50
				Too acid	0.42

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
BnB:					
Benchley	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
BoA:					
Bosque	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
BpA:					
Bosque	55	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
Tinn	42	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00	Slow water movement	1.00
BrA:					
Branyon	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
BtB:					
Bryde	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
				Sodium content	0.32
BuA:					
Buchel	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	0.60	Flooding	0.60
				Sodium content	0.08
BvA:					
Buchel	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.08
BwB:					
Burlewash	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
		Too acid	0.21	Too acid	0.91

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
BwC2:					
Burlewash, eroded	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
		Too acid	0.21	Too acid	0.91
				Too steep	0.08
BwE:					
Burlewash	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
		Slope	1.00	Too steep	1.00
		Too acid	0.14	Too acid	0.91
				Too steep	0.50
CaB:					
Cadell	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Depth to saturated zone	0.84	Depth to saturated zone	0.84
				Sodium content	0.02
CbB:					
Carbengle	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00		
CbC:					
Carbengle	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep	0.08
CbC2:					
Carbengle, eroded	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep	0.08
CbE:					
Carbengle	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep	1.00
		Slope	1.00	Too steep	0.50
ChA:					
Chazos	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
ChB:					
Chazos	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
CnB:					
Conquista	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.08
CnG:					
Conquista	85	Very limited		Very limited	
		Slope	1.00	Too steep	1.00
		Slow water movement	1.00	Too steep	1.00
				Slow water movement	1.00
				Sodium content	0.08
CoA:					
Cost	85	Very limited		Very limited	
		Slow water movement	1.00	Sodium content	1.00
		Depth to saturated zone	1.00	Salinity	1.00
		Flooding	0.60	Slow water movement	1.00
				Depth to saturated zone	0.99
				Flooding	0.60
CpB:					
Coy	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.02
CrB:					
Crockett	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.32
CrC2:					
Crockett, eroded	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.32
				Too steep	0.08
CsB:					
Crockett	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.32

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
CsC2:					
Crockett, eroded	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.32
				Too steep	0.08
CuB:					
Cuero	85	Very limited		Not limited	
		Depth to bedrock	1.00		
		Slow water movement	1.00		
DeA:					
Degola	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Flooding	0.60
		Flooding	0.60		
DfA:					
Degola	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
DmB:					
Dimebox	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too acid	0.31
DyC2:					
Dreyer, eroded	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
DyE:					
Dreyer	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Slope	1.00	Too steep	1.00
				Too steep	0.50
EcB:					
Ecleto	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	0.94
				Sodium content	0.08

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
EcC:					
Ecleto	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	0.94
				Too steep	0.08
				Sodium content	0.08
EdB:					
Edge	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
EdC2:					
Edge, eroded	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
EdD3:					
Edge, severely eroded	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Slope	0.50	Too steep	0.68
EdE2:					
Edge	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
EgC:					
Edge	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
EgE:					
Edge	80	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Slope	1.00	Too steep	1.00
				Too steep	0.50
EkB:					
Elmendorf	60	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.02
Denhawken	40	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.32

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
EkC:					
Elmendorf	60	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.32
				Too steep	0.08
Denhawken	40	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
				Sodium content	0.02
EsB:					
Eloso	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
FnB:					
Flatonia	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
		Depth to bedrock	1.00	Depth to bedrock	0.14
FsB:					
Frelsburg	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.18
FsC:					
Frelsburg	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.18
				Too steep	0.08
GfA:					
Ganado	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00	Slow water movement	1.00
GhC:					
Gholson	85	Very limited		Not limited	
		Slow water movement	1.00		
GkC:					
Gillett	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	0.94
				Sodium content	0.18

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
GkF:					
Gillett	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Large stones on the surface	1.00
		Depth to bedrock	1.00	Too steep	1.00
				Slow water movement	1.00
				Too steep	1.00
GP:					
Pits	100	Not rated		Not rated	
GrB:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
GrC:					
Greenvine	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
				Too steep	0.08
GtB:					
Griter	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
GtC2:					
Griter, eroded	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
				Too steep	0.08
GU:					
Gullied land	85	Not rated		Not rated	
ImA:					
Imogene	90	Very limited		Very limited	
		Slow water movement	1.00	Sodium content	1.00
				Slow water movement	1.00
JsC:					
Jedd	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	0.26
				Too steep	0.08

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
JsE:					
Jedd	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Slope	1.00	Too steep	0.78
				Slow water movement	0.26
KuB:					
Kurten	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
LeB:					
Leming	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
LkA:					
Luckenbach	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.26
LkB:					
Luckenbach	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.26
LuB:					
Luling	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
LuC:					
Luling	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
LuC2:					
Luling, eroded	100	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
MaA:					
Mabank	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.18

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
MeA:					
Meguin	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Flooding	0.60
		Flooding	0.60		
MfA:					
Meguin	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00		
MoB:					
Monteola	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
MoC:					
Monteola	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too steep	0.08
NaA:					
Navasota	80	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Slow water movement	1.00
NmB:					
Normangee	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.18
NmC:					
Normangee	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.18
				Too steep	0.08
NuC:					
Nusil	85	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
				Slow water movement	0.94

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
PaC:					
Padina	85	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
PbA:					
Papalote	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
PbB:					
Papalote	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
PkB:					
Pavelek	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Slow water movement	0.94
RhC:					
Rhymes	85	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
				Slow water movement	0.26
RoB:					
Rosanky	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.42
		Depth to bedrock	1.00	Slow water movement	0.26
RoC2:					
Rosanky, eroded	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.42
		Depth to bedrock	1.00	Slow water movement	0.26
				Too steep	0.08
RsB:					
Rosenbrock	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
RvA:					
Rutersville	85	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
		Depth to bedrock	1.00	Slow water movement	0.94
		Depth to saturated zone	0.24	Depth to saturated zone	0.24
				Too acid	0.07
				Sodium content	0.02
SaD:					
Sarnosa	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep	0.92
		Slope	0.88	Too steep	0.06
ScC:					
Schattel	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slow water movement	0.94
				Too steep	0.08
				Sodium content	0.08
ShC:					
Shalba	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
				Too acid	0.77
SnC:					
Shiner	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep	0.08
SnE:					
Shiner	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep	1.00
		Slope	1.00	Too steep	0.50
SoC:					
Shiro	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	0.94
				Too acid	0.42

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
SsC:					
Silstid	85	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
SvD:					
Silvern	80	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
		Too acid	0.14	Too acid	0.42
		Slope	0.12	Too steep	0.32
		Cobble content	0.04	Cobble content	0.04
SwA:					
Singleton	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	1.00	Too acid	0.42
SwC:					
Singleton	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00
				Too acid	0.42
SxB:					
Styx	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.07
SyC:					
Sunev	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep	0.08
SyE:					
Sunev	80	Very limited		Very limited	
		Slope	1.00	Too steep	1.00
		Slow water movement	1.00	Too steep	1.00
TbA:					
Tabor	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too acid	0.42
				Sodium content	0.02
TbB:					
Tabor	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too acid	0.42
				Sodium content	0.02

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
TnA:					
Tinn	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Flooding	0.60	Flooding	0.60
ToA:					
Tinn	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00	Slow water movement	1.00
TrB:					
Tordia	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
TtC:					
Tremona	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Depth to saturated zone	0.84	Filtering capacity	0.99
				Depth to saturated zone	0.84
				Too acid	0.42
W:					
Water	100	Not rated		Not rated	
WaA:					
Waelder	85	Somewhat limited		Somewhat limited	
		Flooding	0.60	Flooding	0.60
		Slow water movement	0.32		
WeA:					
Waelder	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.32		
WsC:					
Weesatche	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep	0.08
WwA:					
Wilson	95	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Sodium content	0.18

Table 20.--Disposal of Wastewater by Infiltration and slow rate treatment--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ZkB:					
Zack	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
				Too acid	0.42
ZuB:					
Zulch	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00

Table 21.--Source of Gravel and Sand

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Potential source of gravel: Value	Potential source of sand: Rating class	Potential source of sand: Value
AmB:					
Alum	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.06
ApC:					
Arenosa	85	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.40
		Bottom layer	0.00	Thickest layer	0.40
ArA:					
Arol	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
ArB:					
Arol	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
AxB:					
Axtell	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
AxC:					
Axtell	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
AxE:					
Axtell	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BnB:					
Benchley	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BoA:					
Bosque	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
BpA:					
Bosque	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Tinn	42	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BrA:					
Branyon	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BtB:					
Bryde	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BuA:					
Buchel	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
BvA:					
Buchel	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
BwB:					
Burlewash	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BwC2:					
Burlewash, eroded	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BwE:					
Burlewash	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CaB:					
Cadell	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CbB:					
Carbengle	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CbC:					
Carbengle	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
CbC2:					
Carbengle, eroded	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CbE:					
Carbengle	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ChA:					
Chazos	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
ChB:					
Chazos	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CnB:					
Conquista	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CnG:					
Conquista	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CoA:					
Cost	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CpB:					
Coy	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CrB:					
Crockett	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CrC2:					
Crockett, eroded	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CsB:					
Crockett	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
CsC2:					
Crockett, eroded	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
CuB:					
Cuero	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DeA:					
Degola	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DfA:					
Degola	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DmB:					
Dimebox	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DyC2:					
Dreyer, eroded	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DyE:					
Dreyer	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
EcB:					
Ecleto	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
EcC:					
Ecleto	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
EdB:					
Edge	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EdC2:					
Edge, eroded	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
EdD3:					
Edge, severely eroded	100	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
EdE2:					
Edge	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EgC:					
Edge	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EgE:					
Edge	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
EkB:					
Elmendorf	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Denhawken	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EkC:					
Elmendorf	60	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Denhawken	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EsB:					
Eloso	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FnB:					
Flatonia	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FsB:					
Frelsburg	100	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
FsC:					
Frelsburg-----------	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GfA:					
Ganado--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GhC:					
Gholson-------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GkC:					
Gillett-------------	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
GkF:					
Gillett-------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GP:					
Pits----------------	100	Not rated		Not rated	
GrB:					
Greenvine-----------	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
GrC:					
Greenvine-----------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GtB:					
Griter--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GtC2:					
Griter, eroded------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GU:					
Gullied land--------	85	Not rated		Not rated	

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
ImA:					
Imogene	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
JsC:					
Jedd	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
JsE:					
Jedd	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
KuB:					
Kurten	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LeB:					
Leming	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LkA:					
Luckenbach	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LkB:					
Luckenbach	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
LuB:					
Luling	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LuC:					
Luling	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LuC2:					
Luling, eroded	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MaA:					
Mabank	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
MeA:					
Meguin----------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MfA:					
Meguin----------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MoB:					
Monteola--------------	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
MoC:					
Monteola--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NaA:					
Navasota--------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NmB:					
Normangee-------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NmC:					
Normangee-------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NuC:					
Nusil-----------------	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.08
PaC:					
Padina----------------	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.05
PbA:					
Papalote--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
PbB:					
Papalote--------------	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
PkB:					
Pavelek	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
RhC:					
Rhymes	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.14
RoB:					
Rosanky	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
RoC2:					
Rosanky, eroded	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
RsB:					
Rosenbrock	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
RvA:					
Rutersville	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
SaD:					
Sarnosa	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ScC:					
Schattel	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
ShC:					
Shalba	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SnC:					
Shiner	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.01
SnE:					
Shiner	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.01

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
SoC:					
Shiro	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SsC:					
Silstid	85	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.07
SvD:					
Silvern	80	Fair		Fair	
		Bottom layer	0.19	Bottom layer	0.00
		Thickest layer	0.44	Thickest layer	0.03
SwA:					
Singleton	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
SwC:					
Singleton	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
SxB:					
Styx	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.06
SyC:					
Sunev	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SyE:					
Sunev	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TbA:					
Tabor	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TbB:					
Tabor	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TnA:					
Tinn	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 21.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
ToA:					
Tinn	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TrB:					
Tordia	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
TtC:					
Tremona	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
W:					
Water	100	Not rated		Not rated	
WaA:					
Waelder	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.08
		Thickest layer	0.00	Bottom layer	0.08
WeA:					
Waelder	85	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
WsC:					
Weesatche	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WwA:					
Wilson	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ZkB:					
Zack	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ZuB:					
Zulch	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
AmB:							
Alum	100	Poor		Fair		Poor	
		Wind erosion	0.00	Shrink-swell	0.99	Too sandy	0.00
		Too sandy	0.00			Hard to reclaim (rock fragments)	0.95
		Too acid	0.74				
		Organic matter content low	0.88				
ApC:							
Arenosa	85	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Too acid	0.98
		Organic matter content low	0.18				
		Droughty	0.38				
		Too acid	0.54				
ArA:							
Arol	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.45	Low strength	0.00	Depth to bedrock	0.79
		Organic matter content low	0.75	Shrink-swell	0.12	Salinity	0.88
		Depth to bedrock	0.79			Sodium content	0.90
		Too acid	0.84				
		Water erosion	0.90				
		Sodium content	0.90				
ArB:							
Arol	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.75	Low strength	0.00	Salinity	0.88
		Droughty	0.82	Shrink-swell	0.12	Sodium content	0.90
		Too acid	0.84			Depth to bedrock	0.99
		Water erosion	0.90				
		Sodium content	0.90				
		Depth to bedrock	0.99				
AxB:							
Axtell	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.12		
		Too acid	0.68				
		Water erosion	0.99				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
AxC:							
Axtell	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.12		
		Too acid	0.68				
		Water erosion	0.99				
AxE:							
Axtell	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.15	Slope	0.96
		Too acid	0.68				
		Water erosion	0.99				
BnB:							
Benchley	85	Fair		Poor		Fair	
		Too clayey	0.12	Low strength	0.00	Too clayey	0.11
				Shrink-swell	0.12		
BoA:							
Bosque	85	Fair		Poor		Fair	
		Too clayey	0.98	Low strength	0.00	Too clayey	0.97
BpA:							
Bosque	55	Fair		Poor		Good	
		Organic matter content low	0.88	Low strength	0.00		
Tinn	42	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Carbonate content	0.97	Low strength	0.00		
BrA:							
Branyon	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Carbonate content	0.80	Low strength	0.00		
BtB:							
Bryde	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Sodium content	0.78			Sodium content	0.78
		Water erosion	0.90				
BuA:							
Buchel	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Sodium content	0.97	Low strength	0.00	Sodium content	0.98
BvA:							
Buchel	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Sodium content	0.97	Low strength	0.00	Sodium content	0.98

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
BwB:							
Burlewash	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.05	Low strength	0.00	Depth to bedrock	0.35
		Depth to bedrock	0.35	Shrink-swell	0.12	Too acid	0.50
		Too acid	0.50				
		Organic matter content low	0.60				
		Water erosion	0.90				
BwC2:							
Burlewash, eroded	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.08	Low strength	0.00	Depth to bedrock	0.46
		Depth to bedrock	0.46	Shrink-swell	0.12	Too acid	0.50
		Too acid	0.50				
		Organic matter content low	0.60				
		Water erosion	0.90				
BwE:							
Burlewash	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.03	Low strength	0.00	Depth to bedrock	0.35
		Depth to bedrock	0.35	Shrink-swell	0.12	Too acid	0.59
		Too acid	0.50			Slope	0.96
CaB:							
Cadell	85	Fair		Poor		Fair	
		Too clayey	0.05	Low strength	0.00	Too clayey	0.03
		Organic matter content low	0.88	Shrink-swell	0.28	Depth to saturated zone	0.91
		Water erosion	0.90	Depth to saturated zone	0.91		
CbB:							
Carbengle	90	Poor		Poor		Poor	
		Carbonate content	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Organic matter content low	0.88	Low strength	0.22	Depth to bedrock	0.90
		Depth to bedrock	0.90				
CbC:							
Carbengle	90	Poor		Poor		Poor	
		Carbonate content	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Organic matter content low	0.88	Low strength	0.22	Depth to bedrock	0.99
		Depth to bedrock	0.99				
CbC2:							
Carbengle, eroded	90	Poor		Poor		Poor	
		Carbonate content	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Depth to bedrock	0.10	Low strength	0.22	Depth to bedrock	0.10
		Droughty	0.43				
		Organic matter content low	0.88				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
CbE:							
Carbengle-----------	85	Poor		Poor		Poor	
		Carbonate content	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Depth to bedrock	0.35	Low strength	0.22	Depth to bedrock	0.35
		Droughty	0.83			Slope	0.96
		Organic matter content low	0.88				
ChA:							
Chazos--------------	85	Poor		Poor		Poor	
		Wind erosion	0.00	Low strength	0.00	Too clayey	0.00
		Too clayey	0.00	Shrink-swell	0.89	Rock fragments	0.97
		Organic matter content low	0.75				
		Too acid	0.95				
ChB:							
Chazos--------------	85	Poor		Poor		Poor	
		Wind erosion	0.00	Low strength	0.00	Too clayey	0.00
		Too clayey	0.00	Shrink-swell	0.95	Rock fragments	0.97
		Organic matter content low	0.88				
		Too acid	0.95				
CnB:							
Conquista-----------	85	Fair		Good		Poor	
		Sodium content	0.97			Rock fragments	0.00
						Salinity	0.88
						Hard to reclaim (rock fragments)	0.92
						Sodium content	0.98
CnG:							
Conquista-----------	85	Fair		Poor		Poor	
		Sodium content	0.97	Slope	0.00	Slope	0.00
						Rock fragments	0.00
						Salinity	0.88
						Hard to reclaim (rock fragments)	0.92
						Sodium content	0.98
CoA:							
Cost----------------	85	Poor		Fair		Poor	
		Wind erosion	0.00	Depth to saturated zone	0.53	Sodium content	0.00
		Salinity	0.00	Shrink-swell	0.59	Salinity	0.00
		Sodium content	0.00			Too clayey	0.00
		Too clayey	0.00			Depth to saturated zone	0.53
		Droughty	0.00				
		Organic matter content low	0.18				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
CpB:							
Coy	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.12		
CrB:							
Crockett	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.24	Shrink-swell	0.28	Sodium content	0.78
		Sodium content	0.78			Rock fragments	0.97
		Water erosion	0.90				
		Carbonate content	0.97				
CrC2:							
Crockett, eroded	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.45	Sodium content	0.78
		Sodium content	0.78			Rock fragments	0.97
		Water erosion	0.90				
		Carbonate content	0.97				
CsB:							
Crockett	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.24	Shrink-swell	0.26	Sodium content	0.78
		Sodium content	0.78			Rock fragments	0.97
		Carbonate content	0.97				
CsC2:							
Crockett, eroded	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.24	Shrink-swell	0.31	Sodium content	0.78
		Sodium content	0.78			Rock fragments	0.97
		Carbonate content	0.97				
CuB:							
Cuero	85	Fair		Fair		Good	
		Organic matter content low	0.60	Low strength	0.22		
		Carbonate content	0.68	Shrink-swell	0.89		
DeA:							
Degola	90	Good		Fair		Good	
				Low strength	0.78		
DfA:							
Degola	85	Good		Fair		Good	
				Low strength	0.78		

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
DmB:							
Dimebox	100	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Too acid	0.88	Low strength	0.00		
DyC2:							
Dreyer, eroded	80	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Organic matter content low	0.75	Low strength	0.00		
		Carbonate content	0.95				
DyE:							
Dreyer	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Organic matter content low	0.75	Low strength	0.00	Slope	0.96
		Carbonate content	0.95				
EcB:							
Ecleto	85	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.00	Shrink-swell	0.12	Rock fragments	0.97
		Sodium content	0.97				
		Water erosion	0.99				
EcC:							
Ecleto	85	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.00	Shrink-swell	0.12	Rock fragments	0.97
		Sodium content	0.97				
		Water erosion	0.99				
EdB:							
Edge	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.88	Shrink-swell	0.38		
		Water erosion	0.90				
		Too acid	0.92				
EdC2:							
Edge, eroded	100	Poor		Fair		Poor	
		Too clayey	0.00	Shrink-swell	0.85	Too clayey	0.00
		Organic matter content low	0.18				
		Water erosion	0.90				
		Too acid	0.92				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
EdD3:							
Edge, severely eroded	100	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.88	Shrink-swell	0.31		
		Water erosion	0.90				
		Too acid	0.92				
EdE2:							
Edge	80	Fair		Poor		Fair	
		Too clayey	0.32	Low strength	0.00	Too clayey	0.23
		Organic matter content low	0.88	Shrink-swell	0.82		
		Too acid	0.92				
EgC:							
Edge	100	Poor		Fair		Poor	
		Too clayey	0.00	Shrink-swell	0.62	Too clayey	0.00
		Organic matter content low	0.88				
		Too acid	0.92				
		Water erosion	0.99				
EgE:							
Edge	80	Fair		Fair		Fair	
		Organic matter content low	0.18	Shrink-swell	0.80	Too clayey	0.23
		Too clayey	0.32			Slope	0.96
		Too acid	0.92				
		Water erosion	0.99				
EkB:							
Elmendorf	60	Fair		Poor		Good	
		Carbonate content	0.95	Low strength	0.00		
		Salinity	0.97	Shrink-swell	0.36		
Denhawken	40	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.12	Sodium content	0.78
		Sodium content	0.78			Carbonate content	0.92
		Carbonate content	0.80				
		Salinity	0.97				
EkC:							
Elmendorf	60	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Sodium content	0.78	Shrink-swell	0.14	Sodium content	0.78
		Organic matter content low	0.88				
		Carbonate content	0.95				
		Salinity	0.97				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
Denhawken-----------	40	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Carbonate content	0.80	Shrink-swell	0.12	Sodium content	0.78
		Organic matter content low	0.88			Carbonate content	0.92
		Salinity	0.97				
EsB:							
Eloso----------------	90	Poor		Fair		Poor	
		Too clayey	0.00	Shrink-swell	0.82	Too clayey	0.00
		Organic matter content low	0.18				
		Carbonate content	0.97				
FnB:							
Flatonia------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Carbonate content	0.80	Shrink-swell	0.22		
				Depth to bedrock	0.87		
FsB:							
Frelsburg-----------	100	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Carbonate content	0.32	Low strength	0.00	Sodium content	0.90
		Sodium content	0.90				
FsC:							
Frelsburg-----------	100	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Carbonate content	0.32	Low strength	0.00	Sodium content	0.90
		Sodium content	0.90				
GfA:							
Ganado--------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.00		
GhC:							
Gholson-------------	85	Poor		Good		Good	
		Wind erosion	0.00				
		Organic matter content low	0.75				
GkC:							
Gillett-------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.94	Depth to bedrock	0.84
		Depth to bedrock	0.84			Sodium content	0.90
		Water erosion	0.90				
		Sodium content	0.90				
		Droughty	0.92				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
GkF:							
Gillett	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.89	Slope	0.04
		Depth to bedrock	0.84			Depth to bedrock	0.84
		Water erosion	0.90			Sodium content	0.90
		Sodium content	0.90				
GP:							
Pits	100	Not rated		Not rated		Not rated	
GrB:							
Greenvine	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Depth to bedrock	0.99	Shrink-swell	0.00	Depth to bedrock	0.99
		Droughty	0.99	Low strength	0.00		
GrC:							
Greenvine	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.32	Shrink-swell	0.00	Depth to bedrock	0.99
		Depth to bedrock	0.99	Low strength	0.00		
		Droughty	0.99				
GtB:							
Griter	85	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.22	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.87		
GtC2:							
Griter, eroded	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.68	Shrink-swell	0.87		
GU:							
Gullied land	85	Not rated		Not rated		Not rated	
ImA:							
Imogene	90	Poor		Fair		Poor	
		Sodium content	0.00	Low strength	0.78	Sodium content	0.00
		Salinity	0.50	Shrink-swell	0.87	Salinity	0.00
		Water erosion	0.90				
JsC:							
Jedd	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Too acid	0.54	Low strength	0.00	Depth to bedrock	0.97
		Organic matter content low	0.60	Shrink-swell	0.91	Too acid	0.98
		Droughty	0.84				
		Depth to bedrock	0.97				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
JsE:							
Jedd	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.26	Low strength	0.00	Depth to bedrock	0.54
		Depth to bedrock	0.54	Shrink-swell	0.92	Slope	0.84
		Too acid	0.54			Too acid	0.98
		Organic matter content low	0.60				
KuB:							
Kurten	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.88	Shrink-swell	0.12		
		Too acid	0.88				
		Water erosion	0.90				
LeB:							
Leming	85	Poor		Fair		Fair	
		Wind erosion	0.00	Shrink-swell	0.99	Too sandy	0.01
		Too sandy	0.01				
		Organic matter content low	0.18				
LkA:							
Luckenbach	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.60	Shrink-swell	0.93	Rock fragments	0.97
		Water erosion	0.99				
LkB:							
Luckenbach	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.60	Shrink-swell	0.89	Rock fragments	0.97
		Water erosion	0.99				
LuB:							
Luling	100	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
				Low strength	0.00		
LuC:							
Luling	100	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
				Low strength	0.00		
LuC2:							
Luling, eroded	100	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
				Low strength	0.00		

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
MaA:							
Mabank--------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Water erosion	0.90	Shrink-swell	0.12	Sodium content	0.90
		Sodium content	0.90				
MeA:							
Meguin--------------	80	Fair		Poor		Fair	
		Carbonate content	0.46	Low strength	0.00	Carbonate content	0.46
		Water erosion	0.90	Shrink-swell	0.87		
MfA:							
Meguin--------------	80	Fair		Poor		Fair	
		Carbonate content	0.46	Low strength	0.00	Carbonate content	0.46
		Water erosion	0.90	Shrink-swell	0.87		
MoB:							
Monteola------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Salinity	0.88	Low strength	0.00		
		Organic matter content low	0.88				
		Water erosion	0.99				
MoC:							
Monteola------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Salinity	0.88	Low strength	0.00		
		Water erosion	0.99				
NaA:							
Navasota------------	80	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Organic matter content low	0.32	Low strength	0.00	Depth to saturated zone	0.29
		Too acid	0.68	Depth to saturated zone	0.29		
NmB:							
Normangee-----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.12	Salinity	0.88
		Sodium content	0.90			Sodium content	0.90
		Water erosion	0.99				
NmC:							
Normangee-----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.12	Salinity	0.88
		Sodium content	0.90			Sodium content	0.90
		Water erosion	0.99				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NuC:							
Nusil	85	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Organic matter content low	0.88				
PaC:							
Padina	85	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Organic matter content low	0.18				
PbA:							
Papalote	85	Poor		Poor		Poor	
		Wind erosion	0.00	Low strength	0.00	Too clayey	0.00
		Too clayey	0.00	Shrink-swell	0.91		
		Organic matter content low	0.18				
PbB:							
Papalote	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.50	Shrink-swell	0.87		
PkB:							
Pavelek	85	Poor		Poor		Poor	
		Carbonate content	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.00	Shrink-swell	0.78	Rock fragments	0.97
		Too clayey	0.00				
		Water erosion	0.99				
RhC:							
Rhymes	85	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Organic matter content low	0.88				
RoB:							
Rosanky	85	Poor		Good		Poor	
		Too clayey	0.00			Too clayey	0.00
		Organic matter content low	0.18			Rock fragments	0.97
		Too acid	0.74				
		Water erosion	0.99				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
RoC2:							
Rosanky, eroded-----	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.97	Rock fragments	0.97
		Too acid	0.74				
RsB:							
Rosenbrock----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Carbonate content	0.97	Shrink-swell	0.12		
RvA:							
Rutersville---------	85	Poor		Poor		Fair	
		Wind erosion	0.00	Low strength	0.00	Too clayey	0.23
		Too clayey	0.32	Shrink-swell	0.65		
		Too acid	0.68	Depth to bedrock	0.99		
		Organic matter content low	0.88				
SaD:							
Sarnosa-------------	85	Fair		Good		Fair	
		Carbonate content	0.68			Carbonate content	0.68
ScC:							
Schattel------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Carbonate content	0.54	Shrink-swell	0.12	Carbonate content	0.54
		Salinity	0.88			Salinity	0.88
		Organic matter content low	0.88			Sodium content	0.98
		Sodium content	0.97				
ShC:							
Shalba--------------	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Shrink-swell	0.12	Too acid	0.98
		Too acid	0.54				
		Organic matter content low	0.60				
		Water erosion	0.90				
SnC:							
Shiner--------------	85	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Carbonate content	0.00			Hard to reclaim (dense layer)	0.00
		Depth to bedrock	0.00			Depth to bedrock	0.00
						Rock fragments	0.00

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
SnE:							
Shiner	85	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Carbonate content	0.00			Hard to reclaim (dense layer)	0.00
		Depth to bedrock	0.00			Depth to bedrock	0.00
						Rock fragments	0.00
						Slope	0.96
SoC:							
Shiro	85	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Too clayey	0.00	Low strength	0.00	Depth to bedrock	0.84
		Organic matter content low	0.32	Shrink-swell	0.12		
		Droughty	0.34				
		Too acid	0.50				
		Depth to bedrock	0.84				
SsC:							
Silstid	85	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Too sandy	0.00				
		Too acid	0.84				
		Organic matter content low	0.88				
SvD:							
Silvern	80	Poor		Fair		Poor	
		Droughty	0.00	Cobble content	0.96	Hard to reclaim (rock fragments)	0.00
		Too sandy	0.16			Rock fragments	0.00
		Organic matter content low	0.68			Too sandy	0.16
		Too acid	0.84				
SwA:							
Singleton	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.32	Shrink-swell	0.56	Too acid	0.98
		Too acid	0.54				
		Water erosion	0.90				
SwC:							
Singleton	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Too acid	0.54	Low strength	0.00	Depth to bedrock	0.97
		Droughty	0.72	Shrink-swell	0.21	Too acid	0.98
		Organic matter content low	0.75				
		Water erosion	0.90				
		Depth to bedrock	0.97				

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
SxB:							
Styx	85	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Too sandy	0.00				
		Organic matter content low	0.50				
		Too acid	0.68				
SyC:							
Sunev	85	Poor		Fair		Poor	
		Carbonate content	0.00	Low strength	0.78	Carbonate content	0.00
		Organic matter content low	0.60				
SyE:							
Sunev	80	Poor		Fair		Poor	
		Carbonate content	0.00	Low strength	0.78	Carbonate content	0.00
		Organic matter content low	0.60			Slope	0.37
TbA:							
Tabor	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.60	Shrink-swell	0.20		
		Too acid	0.84				
TbB:							
Tabor	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.60	Shrink-swell	0.12		
		Too acid	0.84				
TnA:							
Tinn	85	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Carbonate content	0.97	Low strength	0.00		
ToA:							
Tinn	90	Poor		Poor		Poor	
		Too clayey	0.00	Shrink-swell	0.00	Too clayey	0.00
		Organic matter content low	0.75	Low strength	0.00		
		Carbonate content	0.97				
TrB:							
Tordia	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.32	Hard to reclaim (dense layer)	0.00

Table 22.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
TtC:							
Tremona	85	Poor		Poor		Poor	
		Too sandy	0.00	Low strength	0.00	Too sandy	0.00
		Wind erosion	0.00	Shrink-swell	0.76	Depth to saturated zone	0.91
		Organic matter content low	0.50	Depth to saturated zone	0.91		
		Too acid	0.54				
W:							
Water	100	Not rated		Not rated		Not rated	
WaA:							
Waelder	85	Fair		Good		Fair	
		Organic matter content low	0.18			Too sandy	0.68
		Too sandy	0.68				
WeA:							
Waelder	85	Fair		Good		Good	
		Organic matter content low	0.18				
WsC:							
Weesatche	85	Poor		Fair		Good	
		Carbonate content	0.00	Shrink-swell	0.89		
WwA:							
Wilson	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Water erosion	0.90	Shrink-swell	0.12	Sodium content	0.90
		Sodium content	0.90				
ZkB:							
Zack	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.88		
		Too acid	0.84				
		Water erosion	0.90				
ZuB:							
Zulch	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.60	Shrink-swell	0.12		
		Water erosion	0.90				

Table 23.--Ponds and Embankments

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AmB:							
Alum	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.06	Depth to water	1.00
ApC:							
Arenosa	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.40	Depth to water	1.00
ArA:							
Arol	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.06	Hard to pack	0.89	Depth to water	1.00
		Seepage	0.02	Thin layer	0.77		
ArB:							
Arol	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.02	Hard to pack	0.89	Depth to water	1.00
		Depth to bedrock	0.02	Thin layer	0.56		
AxB:							
Axtell	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Hard to pack	0.44	Depth to water	1.00
AxC:							
Axtell	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Hard to pack	0.47	Depth to water	1.00
AxE:							
Axtell	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Hard to pack	0.40	Depth to water	1.00
BnB:							
Benchley	85	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.81	Depth to water	1.00
BoA:							
Bosque	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.22	Depth to water	1.00
BpA:							
Bosque	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.27	Depth to water	1.00
Tinn	42	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
BrA:							
Branyon	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
BtB:							
Bryde	85	Not limited		Somewhat limited		Very limited	
				Piping	0.40	Depth to water	1.00
BuA:							
Buchel	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
BvA:							
Buchel	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
BwB:							
Burlewash	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.17	Thin layer	0.91	Depth to water	1.00
		Seepage	0.03				
BwC2:							
Burlewash, eroded	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.13	Thin layer	0.88	Depth to water	1.00
		Seepage	0.03				
BwE:							
Burlewash	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.53	Thin layer	0.91	Depth to water	1.00
		Depth to bedrock	0.17				
CaB:							
Cadell	85	Not limited		Somewhat limited		Very limited	
				Depth to saturated zone	0.84	Depth to water	1.00
				Piping	0.60		
CbB:							
Carbengle	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.70	Depth to water	1.00
		Depth to bedrock	0.04	Piping	0.68		
CbC:							
Carbengle	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.68	Depth to water	1.00
		Depth to bedrock	0.02	Thin layer	0.56		
CbC2:							
Carbengle, eroded	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.98	Depth to water	1.00
		Depth to bedrock	0.30	Piping	0.68		
CbE:							
Carbengle	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.91	Depth to water	1.00
		Depth to bedrock	0.17	Piping	0.68		
ChA:							
Chazos	85	Not limited		Not limited		Very limited	
						Depth to water	1.00

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ChB:							
Chazos	85	Not limited		Not limited		Very limited	
						Depth to water	1.00
CnB:							
Conquista	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.88	Depth to water	1.00
CnG:							
Conquista	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Piping	0.83	Depth to water	1.00
		Seepage	0.03				
CoA:							
Cost	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.03	Salinity	1.00	Cutbanks cave	1.00
				Piping	1.00	Salinity and saturated zone	1.00
				Depth to saturated zone	0.99	Slow refill	0.97
						Depth to saturated zone	0.01
CpB:							
Coy	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
CrB:							
Crockett	85	Not limited		Somewhat limited		Very limited	
				Piping	0.22	Depth to water	1.00
CrC2:							
Crockett, eroded	90	Not limited		Somewhat limited		Very limited	
				Piping	0.22	Depth to water	1.00
CsB:							
Crockett	85	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.92	Depth to water	1.00
CsC2:							
Crockett, eroded	80	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.95	Depth to water	1.00
CuB:							
Cuero	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.72	Depth to water	1.00
DeA:							
Degola	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.59	Depth to water	1.00
DfA:							
Degola	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.59	Depth to water	1.00

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
DmB:							
Dimebox	100	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
DyC2:							
Dreyer, eroded	80	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
DyE:							
Dreyer	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
EcB:							
Ecleto	85	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.53	Thin layer	1.00	Depth to water	1.00
		Seepage	0.53	Hard to pack	0.82		
EcC:							
Ecleto	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.53	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	0.50	Hard to pack	0.74		
EdB:							
Edge	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.02	Depth to water	1.00
EdC2:							
Edge, eroded	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.02	Depth to water	1.00
EdD3:							
Edge, severely eroded	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.02	Depth to water	1.00
EdE2:							
Edge	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.78	Depth to water	1.00
EgC:							
Edge	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.02	Depth to water	1.00
EgE:							
Edge	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.78	Depth to water	1.00
EkB:							
Elmendorf	60	Somewhat limited		Very limited		Very limited	
		Seepage	0.03	Hard to pack	1.00	Depth to water	1.00
				Salinity	0.03		
Denhawken	40	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
				Salinity	0.03		

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EkC:							
Elmendorf	60	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
				Salinity	0.03		
Denhawken	40	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
				Salinity	0.03		
EsB:							
Eloso	90	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Depth to water	1.00
FnB:							
Flatonia	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.02	Hard to pack	0.68	Depth to water	1.00
		Depth to bedrock	0.01	Thin layer	0.03		
FsB:							
Frelsburg	100	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
FsC:							
Frelsburg	100	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
GfA:							
Ganado	85	Not limited		Very limited		Very limited	
				Hard to pack	0.99	Depth to water	1.00
GhC:							
Gholson	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.62	Depth to water	1.00
GkC:							
Gillett	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.05	Piping	0.40	Depth to water	1.00
GkF:							
Gillett	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.05	Piping	0.40	Depth to water	1.00
		Slope	0.02				
GP:							
Pits	100	Very limited		Not rated		Not rated	
		Seepage	1.00				
		Slope	0.01				
GrB:							
Greenvine	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.02	Hard to pack	1.00	Depth to water	1.00
		Depth to bedrock	0.02	Thin layer	0.56		
GrC:							
Greenvine	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.02	Hard to pack	1.00	Depth to water	1.00
		Depth to bedrock	0.02	Thin layer	0.56		

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
GtB:							
Griter	85	Not limited		Not limited		Very limited	
						Depth to water	1.00
GtC2:							
Griter, eroded	85	Not limited		Not limited		Very limited	
						Depth to water	1.00
GU:							
Gullied land	85	Very limited		Not rated		Not rated	
		Seepage	1.00				
ImA:							
Imogene	90	Not limited		Very limited		Very limited	
				Piping	1.00	Depth to water	1.00
				Salinity	0.50		
JsC:							
Jedd	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Thin layer	0.61	Depth to water	1.00
		Depth to bedrock	0.02	Piping	0.30		
JsE:							
Jedd	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.11	Thin layer	0.86	Depth to water	1.00
		Seepage	0.03	Piping	0.56		
KuB:							
Kurten	85	Not limited		Not limited		Very limited	
						Depth to water	1.00
LeB:							
Leming	85	Very limited		Not limited		Very limited	
		Seepage	1.00			Depth to water	1.00
LkA:							
Luckenbach	85	Somewhat limited		Not limited		Very limited	
		Seepage	0.03			Depth to water	1.00
LkB:							
Luckenbach	85	Somewhat limited		Not limited		Very limited	
		Seepage	0.03			Depth to water	1.00
LuB:							
Luling	100	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
LuC:							
Luling	100	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
LuC2:							
Luling, eroded	100	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MaA:							
Mabank	85	Not limited		Somewhat limited		Very limited	
				Piping	0.40	Depth to water	1.00
MeA:							
Meguin	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.04	Depth to water	1.00
MfA:							
Meguin	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.05	Depth to water	1.00
MoB:							
Monteola	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
				Salinity	0.12		
MoC:							
Monteola	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
				Salinity	0.12		
NaA:							
Navasota	80	Not limited		Very limited		Very limited	
				Ponding	1.00	Depth to water	1.00
				Depth to saturated zone	1.00		
				Hard to pack	0.98		
NmB:							
Normangee	85	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.93	Depth to water	1.00
NmC:							
Normangee	85	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.93	Depth to water	1.00
NuC:							
Nusil	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.08	Depth to water	1.00
PaC:							
Padina	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.05	Depth to water	1.00
PbA:							
Papalote	85	Not limited		Not limited		Very limited	
						Depth to water	1.00
PbB:							
Papalote	85	Not limited		Not limited		Very limited	
						Depth to water	1.00

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
PkB:							
Pavelek	85	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.70	Hard to pack	0.93		
RhC:							
Rhymes	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.14	Depth to water	1.00
RoB:							
Rosanky	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.53	Piping	0.72	Depth to water	1.00
RoC2:							
Rosanky, eroded	85	Somewhat limited		Not limited		Very limited	
		Seepage	0.53			Depth to water	1.00
RsB:							
Rosenbrock	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Hard to pack	1.00	Depth to water	1.00
RvA:							
Rutersville	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.01	Piping	0.78	Depth to water	1.00
				Depth to saturated zone	0.24		
				Thin layer	0.01		
SaD:							
Sarnosa	85	Very limited		Not limited		Very limited	
		Seepage	1.00			Depth to water	1.00
ScC:							
Schattel	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.03	Hard to pack	1.00	Depth to water	1.00
				Salinity	0.12		
ShC:							
Shalba	85	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.53	Thin layer	1.00	Depth to water	1.00
		Seepage	0.02	Hard to pack	0.54		
SnC:							
Shiner	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	0.61	Seepage	0.01		
SnE:							
Shiner	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	0.61	Seepage	0.01		
SoC:							
Shiro	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.05	Thin layer	0.74	Depth to water	1.00
		Seepage	0.02	Hard to pack	0.12		

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
SsC:							
Silstid	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.07	Depth to water	1.00
SvD:							
Silvern	80	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.44	Depth to water	1.00
SwA:							
Singleton	85	Somewhat limited		Not limited		Very limited	
		Seepage	0.02			Depth to water	1.00
SwC:							
Singleton	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.02	Thin layer	0.61	Depth to water	1.00
		Seepage	0.02	Hard to pack	0.30		
SxB:							
Styx	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.06	Depth to water	1.00
SyC:							
Sunev	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.65	Depth to water	1.00
SyE:							
Sunev	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.65	Depth to water	1.00
		Slope	0.01				
TbA:							
Tabor	90	Not limited		Somewhat limited		Very limited	
				Piping	0.40	Depth to water	1.00
TbB:							
Tabor	90	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.79	Depth to water	1.00
TnA:							
Tinn	85	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
ToA:							
Tinn	90	Not limited		Very limited		Very limited	
				Hard to pack	1.00	Depth to water	1.00
TrB:							
Tordia	85	Not limited		Very limited		Very limited	
				Hard to pack	0.99	Depth to water	1.00
TtC:							
Tremona	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.84	Depth to water	1.00

Table 23.--Ponds and Embankments—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
W:							
Water	100	Not rated		Not rated		Not rated	
WaA:							
Waelder	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
				Seepage	0.08		
WeA:							
Waelder	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
				Seepage	0.01		
WsC:							
Weesatche	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.05	Depth to water	1.00
WwA:							
Wilson	95	Not limited		Somewhat limited		Very limited	
				Piping	0.60	Depth to water	1.00
ZkB:							
Zack	85	Not limited		Somewhat limited		Very limited	
				Piping	0.18	Depth to water	1.00
ZuB:							
Zulch	85	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.15	Depth to water	1.00

Table 24.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains		Constructing terraces and diversions	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AmB:					
Alum	100	Somewhat limited		Somewhat limited	
		Slope	0.04	Slope	0.04
		Content of large stones	0.01	Content of large stones	0.01
ApC:					
Arenosa	85	Somewhat limited		Very limited	
		Slope	0.16	Too Sandy	1.00
				Slope	0.16
ArA:					
Arol	85	Somewhat limited		Very limited	
		Depth to soft bedrock	0.20	K factor	1.00
				Depth to soft bedrock	0.20
ArB:					
Arol	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
		Depth to soft bedrock	0.01	Slope	0.04
				Depth to soft bedrock	0.01
AxB:					
Axtell	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04
AxC:					
Axtell	85	Somewhat limited		Very limited	
		Slope	0.37	K factor	1.00
				Slope	0.37
AxE:					
Axtell	85	Very limited		Very limited	
		Slope	1.00	K factor	1.00
				Slope	1.00
BnB:					
Benchley	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
BoA:					
Bosque	85	Not limited		Somewhat limited	
				K factor	0.50

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
BpA:					
Bosque	55	Not limited		Somewhat limited	
				K factor	0.50
Tinn	42	Not limited		Somewhat limited	
				K factor	0.88
BrA:					
Branyon	85	Not limited		Somewhat limited	
				K factor	0.88
BtB:					
Bryde	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04
BuA:					
Buchel	85	Not limited		Somewhat limited	
				K factor	0.88
BvA:					
Buchel	85	Not limited		Somewhat limited	
				K factor	0.88
BwB:					
Burlewash	85	Somewhat limited		Very limited	
		Depth to soft bedrock	0.65	K factor	1.00
		Slope	0.04	Depth to soft bedrock	0.65
				Slope	0.04
BwC2:					
Burlewash, eroded	85	Somewhat limited		Very limited	
		Depth to soft bedrock	0.54	K factor	1.00
		Slope	0.37	HEL wind	1.00
				Depth to soft bedrock	0.54
				Slope	0.37

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
BwE:					
Burlewash-----------	85	Very limited		Very limited	
		Slope	1.00	HEL wind	1.00
		Depth to soft bedrock	0.65	Slope	1.00
				Depth to soft bedrock	0.65
				K factor	0.50
CaB:					
Cadell--------------	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Depth to saturated zone	1.00
				Slope	0.04
CbB:					
Carbengle-----------	90	Somewhat limited		Somewhat limited	
		Depth to soft bedrock	0.10	K factor	0.88
		Slope	0.04	Depth to soft bedrock	0.10
				Slope	0.04
CbC:					
Carbengle-----------	90	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
		Depth to soft bedrock	0.01	Slope	0.37
				Depth to soft bedrock	0.01
CbC2:					
Carbengle, eroded---	90	Somewhat limited		Somewhat limited	
		Depth to soft bedrock	0.90	Depth to soft bedrock	0.90
		Slope	0.37	K factor	0.88
				Slope	0.37
CbE:					
Carbengle-----------	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to soft bedrock	0.65	K factor	0.88
				Depth to soft bedrock	0.65
ChA:					
Chazos--------------	85	Not limited		Somewhat limited	
				K factor	0.88

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
ChB:					
Chazos	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
CnB:					
Conquista	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
CnG:					
Conquista	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
				K factor	0.88
CoA:					
Cost	85	Not limited		Very limited	
				HEL wind	1.00
				Depth to saturated zone	1.00
				Too Sandy	1.00
				K factor	0.50
CpB:					
Coy	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
CrB:					
Crockett	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04
CrC2:					
Crockett, eroded	90	Somewhat limited		Very limited	
		Slope	0.37	K factor	1.00
				Slope	0.37
CsB:					
Crockett	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
CsC2:					
Crockett, eroded	80	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
CuB:					
Cuero	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.50
				Slope	0.04

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
DeA:					
Degola	90	Not limited		Somewhat limited	
				K factor	0.88
DfA:					
Degola	85	Not limited		Somewhat limited	
				K factor	0.88
DmB:					
Dimebox	100	Somewhat limited		Very limited	
		Slope	0.04	HEL wind	1.00
				K factor	0.88
				Slope	0.04
DyC2:					
Dreyer, eroded	80	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
DyE:					
Dreyer	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
				K factor	0.88
EcB:					
Ecleto	85	Very limited		Very limited	
		Depth to soft bedrock	1.00	K factor	1.00
		Slope	0.04	Depth to soft bedrock	1.00
				Slope	0.04
EcC:					
Ecleto	85	Very limited		Very limited	
		Depth to soft bedrock	1.00	K factor	1.00
		Slope	0.37	Depth to soft bedrock	1.00
				Slope	0.37
EdB:					
Edge	90	Somewhat limited		Very limited	
		Slope	0.16	K factor	1.00
				Slope	0.16
EdC2:					
Edge, eroded	100	Somewhat limited		Very limited	
		Slope	0.37	K factor	1.00
				Slope	0.37

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
EdD3:					
Edge, severely eroded	100	Somewhat limited		Very limited	
		Slope	0.84	K factor	1.00
				Slope	0.84
EdE2:					
Edge	80	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
EgC:					
Edge	100	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
EgE:					
Edge	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
				K factor	0.88
EkB:					
Elmendorf	60	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
Denhawken	40	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
EkC:					
Elmendorf	60	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
Denhawken	40	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
EsB:					
Eloso	90	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.50
				Slope	0.04
FnB:					
Flatonia	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
FsB:					
Frelsburg	100	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
FsC:					
Frelsburg	100	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
GfA:					
Ganado	85	Not limited		Somewhat limited	
				K factor	0.88
GhC:					
Gholson	85	Somewhat limited		Somewhat limited	
		Slope	0.16	K factor	0.88
				Slope	0.16
GkC:					
Gillett	85	Somewhat limited		Very limited	
		Slope	0.16	K factor	1.00
		Depth to soft bedrock	0.16	Slope	0.16
				Depth to soft bedrock	0.16
GkF:					
Gillett	85	Very limited		Very limited	
		Slope	1.00	K factor	1.00
		Depth to soft bedrock	0.16	Slope	1.00
				Depth to soft bedrock	0.16
GP:					
Pits	100	Not rated		Not rated	
GrB:					
Greenvine	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
		Depth to soft bedrock	0.01	Slope	0.04
				Depth to soft bedrock	0.01
GrC:					
Greenvine	85	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
		Depth to soft bedrock	0.01	Slope	0.37
				Depth to soft bedrock	0.01
GtB:					
Griter	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
GtC2:					
Griter, eroded	85	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
GU:					
Gullied land	85	Not rated		Not rated	
ImA:					
Imogene	90	Not limited		Very limited	
				K factor	1.00
JsC:					
Jedd	85	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
		Depth to soft bedrock	0.03	Slope	0.37
				Depth to soft bedrock	0.03
JsE:					
Jedd	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to soft bedrock	0.46	K factor	0.88
				Depth to soft bedrock	0.46
KuB:					
Kurten	85	Somewhat limited		Very limited	
		Slope	0.37	K factor	1.00
				Slope	0.37
LeB:					
Leming	85	Somewhat limited		Somewhat limited	
		Slope	0.04	Slope	0.04
LkA:					
Luckenbach	85	Not limited		Very limited	
				K factor	1.00
LkB:					
Luckenbach	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04
LuB:					
Luling	100	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
LuC:					
Luling	100	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
LuC2:					
Luling, eroded	100	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
MaA:					
Mabank	85	Not limited		Very limited	
				K factor	1.00
MeA:					
Meguin	80	Not limited		Very limited	
				K factor	1.00
MfA:					
Meguin	80	Not limited		Very limited	
				K factor	1.00
MoB:					
Monteola	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04
MoC:					
Monteola	85	Somewhat limited		Very limited	
		Slope	0.37	K factor	1.00
				Slope	0.37
NaA:					
Navasota	80	Not limited		Very limited	
				Ponding	1.00
				Depth to saturated zone	1.00
				K factor	0.88
NmB:					
Normangee	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04
NmC:					
Normangee	85	Somewhat limited		Very limited	
		Slope	0.37	K factor	1.00
				Slope	0.37
NuC:					
Nusil	85	Somewhat limited		Very limited	
		Slope	0.16	Too Sandy	1.00
				Slope	0.16
PaC:					
Padina	85	Somewhat limited		Somewhat limited	
		Slope	0.16	Slope	0.16

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
PbA:					
Papalote	85	Not limited		Somewhat limited	
				K factor	0.88
PbB:					
Papalote	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
PkB:					
Pavelek	85	Very limited		Very limited	
		Thin cemented pan	1.00	K factor	1.00
		Slope	0.04	Thin cemented pan	1.00
				Slope	0.04
RhC:					
Rhymes	85	Somewhat limited		Very limited	
		Slope	0.16	Too Sandy	1.00
				Slope	0.16
RoB:					
Rosanky	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
RoC2:					
Rosanky, eroded	85	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
RsB:					
Rosenbrock	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.12
				Slope	0.04
RvA:					
Rutersville	85	Not limited		Somewhat limited	
				K factor	0.88
SaD:					
Sarnosa	85	Somewhat limited		Somewhat limited	
		Slope	0.96	Slope	0.96
				K factor	0.12
ScC:					
Schattel	85	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37
ShC:					
Shalba	85	Very limited		Very limited	
		Depth to soft bedrock	1.00	K factor	1.00
		Slope	0.16	Depth to soft bedrock	1.00
				Slope	0.16

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
SnC:					
Shiner	85	Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.37	Slope	0.37
				K factor	0.12
SnE:					
Shiner	85	Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
				K factor	0.12
SoC:					
Shiro	85	Somewhat limited		Somewhat limited	
		Slope	0.16	K factor	0.88
		Depth to soft bedrock	0.16	Slope	0.16
				Depth to soft bedrock	0.16
SsC:					
Silstid	85	Somewhat limited		Somewhat limited	
		Slope	0.16	Slope	0.16
SvD:					
Silvern	80	Very limited		Very limited	
		Content of large stones	1.00	Content of large stones	1.00
		Slope	0.63	Slope	0.63
SwA:					
Singleton	85	Not limited		Very limited	
				K factor	1.00
SwC:					
Singleton	85	Somewhat limited		Very limited	
		Slope	0.16	K factor	1.00
		Depth to soft bedrock	0.03	Slope	0.16
				Depth to soft bedrock	0.03
SxB:					
Styx	85	Not limited		Not limited	
SyC:					
Sunev	85	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.50
				Slope	0.37

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value
SyE:					
Sunev	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
				K factor	0.50
TbA:					
Tabor	90	Not limited		Somewhat limited	
				K factor	0.88
TbB:					
Tabor	90	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
TnA:					
Tinn	85	Not limited		Somewhat limited	
				K factor	0.88
ToA:					
Tinn	90	Not limited		Somewhat limited	
				K factor	0.88
TrB:					
Tordia	85	Somewhat limited		Somewhat limited	
		Slope	0.04	K factor	0.88
				Slope	0.04
TtC:					
Tremona	85	Somewhat limited		Very limited	
		Slope	0.16	Depth to saturated zone	1.00
				Slope	0.16
				K factor	0.12
W:					
Water	100	Not rated		Not rated	
WaA:					
Waelder	85	Not limited		Somewhat limited	
				K factor	0.88
WeA:					
Waelder	85	Not limited		Somewhat limited	
				K factor	0.88
WsC:					
Weesatche	85	Somewhat limited		Somewhat limited	
		Slope	0.37	K factor	0.88
				Slope	0.37

Table 24.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Constructing grassed waterways and surface drains		Constructing terraces and diversions	
		Rating class and limiting features	Value	Rating class and limiting features	Value
WwA:					
Wilson	95	Not limited		Very limited	
				K factor	1.00
ZkB:					
Zack	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04
ZuB:					
Zulch	85	Somewhat limited		Very limited	
		Slope	0.04	K factor	1.00
				Slope	0.04

Table 25.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AmB:												
Alum------------	0-30	Loamy fine sand	SC-SM, SM, SP-SM	A-2-4, A-3	0-2	0-10	90-100	90-100	60-95	7-30	0-25	NP-7
	30-52	Sandy clay, clay	CH, CL	A-7	0	0-10	90-100	90-100	80-100	55-85	44-53	22-30
	52-62	Sandy clay loam, clay loam, sandy clay	CL	A-6, A-7	0	0-10	90-100	90-100	80-95	51-65	30-45	11-25
	62-80	Sandy clay loam, sandy loam, loam	CL, SC	A-4, A-6, A-7	0	0-15	80-100	80-100	65-85	36-55	25-45	8-25
ApC:												
Arenosa---------	0-12	Fine sand	SC-SM, SM, SP-SM	A-2-4, A-3	0	0	95-100	95-100	63-98	8-20	16-21	NP-4
	12-80	Fine sand, sand	SC-SM, SM, SP-SM	A-2-4, A-3	0	0	95-100	95-100	63-98	8-20	18-25	NP-6
ArA:												
Arol------------	0-5	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	98-100	95-100	70-85	40-55	16-25	NP-7
	5-33	Clay, clay loam	CH, CL	A-7	0	0	98-100	95-100	90-100	70-95	46-70	30-48
	33-80	Bedrock			---	---	---	---	---	---	---	---
ArB:												
Arol------------	0-6	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	98-100	95-100	70-85	40-55	16-25	NP-7
	6-38	Clay, clay loam	CH, CL	A-7	0	0	98-100	95-100	90-100	70-95	46-70	30-48
	38-80	Bedrock			---	---	---	---	---	---	---	---
AxB:												
Axtell----------	0-10	Gravelly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2-4, A-4	0	0-10	50-75	45-75	30-65	20-50	16-20	NP-4
	10-41	Clay, clay loam	CH, CL	A-7-6	0	0-2	95-100	95-100	85-100	70-98	41-65	25-42
	41-62	Clay, clay loam	CH, CL	A-7-6	0	0-2	95-100	95-100	85-100	70-98	41-65	25-42
	62-80	Clay loam, sandy clay loam, clay	CH, CL	A-6, A-7-6	0	0-2	95-100	95-100	75-100	50-95	35-63	20-45

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
AxC:												
Axtell----------	0-9	Gravelly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2-4, A-4	0	0-10	50-75	45-75	30-65	20-50	16-20	NP-4
	9-45	Clay, clay loam	CH, CL	A-7-6	0	0-2	95-100	95-100	85-100	70-98	41-65	25-42
	45-63	Clay, clay loam	CH, CL	A-7-6	0	0-2	95-100	95-100	85-100	70-98	41-65	25-42
	63-80	Clay loam, sandy clay loam, clay	CH, CL	A-6, A-7-6	0	0-2	95-100	95-100	75-100	50-95	35-63	20-45
AxE:												
Axtell----------	0-11	Gravelly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2-4, A-4	0	0-10	50-75	45-75	30-65	20-50	16-20	NP-4
	11-43	Clay, clay loam	CH, CL	A-7-6	0	0-2	95-100	95-100	85-100	70-98	41-65	25-42
	43-66	Clay, clay loam	CH, CL	A-7-6	0	0-2	95-100	95-100	85-100	70-98	41-65	25-42
	66-80	Clay loam, sandy clay loam, clay	CH, CL	A-6, A-7-6	0	0-2	95-100	95-100	75-100	50-95	35-63	20-45
BnB:												
Benchley--------	0-6	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	80-95	60-80	30-43	11-22
	6-49	Clay, clay loam	CH, CL	A-7	0	0	90-100	90-100	80-95	70-95	44-66	23-41
	49-80	Clay loam, clay	CH	A-7	0	0	95-100	90-100	90-100	75-95	56-75	33-46
BoA:												
Bosque----------	0-11	Clay loam	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	96-100	90-100	56-85	23-45	7-25
	11-54	Loam, clay loam, sandy clay loam	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	95-100	80-90	50-85	23-45	7-25
	54-80	Clay loam, loam, clay	CL, CL-ML	A-4, A-6, A-7-6	0	0	98-100	95-100	85-100	65-94	23-49	7-29
BpA:												
Bosque----------	0-16	Clay loam	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	96-100	90-100	56-85	23-45	7-25
	16-68	Clay loam, loam, sandy clay loam	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	95-100	80-90	50-85	23-45	7-25
	68-80	Clay, clay loam, loam	CL, CL-ML	A-4, A-6, A-7-6	0	0	98-100	95-100	85-100	65-94	23-49	7-29
Tinn------------	0-17	Clay	CH, CL	A-7	0	0	95-100	95-100	85-100	80-100	45-75	25-54
	17-51	Clay, silty clay	CH	A-7	0	0	95-100	90-100	80-100	80-100	55-75	35-54
	51-80	Clay, silty clay	CH	A-7	0	0	95-100	90-100	80-100	80-100	55-75	35-54

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
BrA:												
Branyon----------	0-5	Clay	CH	A-7-6	0	0	95-100	85-100	80-100	75-100	54-80	35-55
	5-74	Clay, silty clay	CH	A-7-6	0	0	95-100	85-100	80-100	75-100	54-80	35-55
	74-80	Clay, silty clay	CH	A-7	0	0	90-100	85-100	80-100	75-100	54-80	38-60
BtB:												
Bryde------------	0-8	Fine sandy loam	SC	A-4, A-6	0	0-5	95-100	95-100	90-100	40-50	24-34	7-15
	8-26	Clay, sandy clay	CH	A-7-6	0	0-5	100	98-100	95-100	60-70	53-71	30-45
	26-44	Clay, sandy clay, clay loam	CH	A-7-6	0	0-5	95-100	95-100	90-100	55-70	51-66	29-41
	44-55	Sandy clay, clay, clay loam	CL, CH	A-7-6	0	0-5	95-100	95-100	95-100	60-70	41-61	21-37
	55-80	Fine sandy loam, very fine sandy loam	SC, SC-SM, SM	A-4	0	0-5	95-100	95-100	90-100	35-45	11-23	NP-10
BuA:												
Buchel-----------	0-17	Clay	CH	A-7-6	0	0	95-100	95-100	90-100	75-95	55-75	32-48
	17-63	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	75-95	55-75	32-48
	63-80	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	75-95	55-75	32-48
BvA:												
Buchel-----------	0-12	Clay	CH	A-7-6	0	0	95-100	95-100	90-100	75-95	55-75	32-48
	12-65	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	75-95	55-75	32-48
	65-80	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	75-95	55-75	32-48
BwB:												
Burlewash--------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4	0	0	90-100	90-100	70-95	40-60	0-25	NP-7
	5-23	Clay, sandy clay	CH, CL	A-7	0	0	95-100	95-100	90-100	51-90	41-55	20-30
	23-28	Clay loam, sandy clay loam, clay	CL	A-6, A-7	0	0	95-100	95-100	75-95	51-75	35-45	18-25
	28-80	Bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
BwC2: Burlewash, eroded---------	0-4	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	90-100	90-100	70-95	40-60	0-25	NP-7
	4-25	Sandy clay, clay	CH, CL	A-7	0	0	95-100	95-100	90-100	51-90	41-55	20-30
	25-29	Sandy clay loam, clay loam, clay	CL	A-6, A-7	0	0	95-100	95-100	75-95	51-75	35-45	18-25
	29-80	Bedrock			---	---	---	---	---	---	---	---
BwE: Burlewash-------	0-3	Gravelly fine sandy loam	SM, GC-GM, GM, SC-SM	A-1-b, A-2-4	0	0-3	50-65	40-50	30-40	15-25	0-20	NP-7
	3-16	Clay, sandy clay	CL, CH	A-7	0	0	95-100	95-100	90-100	51-90	41-55	20-30
	16-28	Sandy clay loam, clay loam, clay	CL	A-6, A-7	0	0	95-100	95-100	75-95	51-75	35-45	18-25
	28-80	Bedrock			---	---	---	---	---	---	---	---
CaB: Cadell----------	0-5	Fine sandy loam	CL-ML, ML, SM	A-4	0	0-1	90-100	90-100	70-95	40-55	15-30	NP-7
	5-47	Clay loam, silty clay, clay	CH, CL	A-7-6	0	0-1	90-100	90-100	85-100	50-95	42-60	25-38
	47-55	Clay, clay loam, silty clay loam	CL	A-6, A-7-6	0	0-1	90-100	90-100	85-100	55-95	30-50	15-30
	55-80	Stratified clay loam to clay	CH, CL	A-6, A-7-6	0	0-1	95-100	95-100	90-100	60-85	35-60	20-40
CbB: Carbengle-------	0-8	Loam	CL	A-4, A-6	0	0-5	90-100	85-100	70-98	51-80	25-40	8-20
	8-35	Clay loam, sandy clay loam, loam	CL	A-4, A-6	0	0-8	85-100	85-100	70-98	51-85	25-40	8-20
	35-80	Bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
CbC:												
Carbengle-------	0-13	Loam	CL	A-4, A-6	0	0-5	90-100	85-100	70-98	51-80	25-40	8-20
	13-38	Clay loam, sandy clay loam, loam silty clay loam	CL	A-4, A-6	0	0-8	85-100	85-100	70-98	51-85	25-40	8-20
	38-80	Bedrock			---	---	---	---	---	---	---	---
CbC2:												
Carbengle, eroded---------	0-8	Loam	CL	A-4, A-6	0	0-5	90-100	85-100	70-98	51-80	25-40	8-20
	8-24	Clay loam, loam, sandy clay loam	CL	A-4, A-6	0	0-8	85-100	85-100	70-98	51-85	25-40	8-20
	24-80	Bedrock			---	---	---	---	---	---	---	---
CbE:												
Carbengle-------	0-7	Loam	CL	A-4, A-6	0	0-5	90-100	85-100	70-98	51-80	25-40	8-20
	7-28	Clay loam, loam, sandy clay loam	CL	A-4, A-6	0	0-8	85-100	85-100	70-98	51-85	25-40	8-20
	28-80	Bedrock			---	---	---	---	---	---	---	---
ChA:												
Chazos----------	0-11	Loamy fine sand	SC-SM, SM	A-2-4, A-4	0	0	80-100	75-100	60-98	20-50	0-25	NP-4
	11-38	Clay, sandy clay, clay loam	CH, CL	A-7-6	0	0	90-100	75-100	70-100	55-85	43-58	21-35
	38-66	Sandy clay loam, clay loam, sandy clay	CH, CL, SC	A-7-6	0	0	90-100	75-100	65-95	35-75	43-58	21-35
	66-80	Clay loam, silty clay loam, clay	CH, CL	A-6, A-7-6	0	0	90-100	75-100	70-95	50-85	35-55	15-35

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
ChB:												
Chazos----------	0-19	Loamy fine sand	SC-SM, SM	A-2-4, A-4	0	0	80-100	75-100	60-98	20-50	0-25	NP-4
	19-44	Clay, sandy clay, clay loam	CH, CL	A-7-6	0	0	90-100	75-100	70-100	55-85	43-58	21-35
	44-50	Clay loam, sandy clay loam, sandy clay	CH, CL, SC	A-7-6	0	0	90-100	75-100	65-95	35-75	43-58	21-35
	50-80	Sandy clay loam, clay loam, silty clay loam, clay	CH, CL	A-6, A-7-6	0	0	90-100	75-100	70-95	50-85	35-55	15-35
CnB:												
Conquista-------	0-10	Clay	CH	A-7-6	0	0	95-100	95-100	85-100	65-85	56-71	33-45
	10-80	Stratified fine sandy loam to gravelly sandy clay loam	CL, CL-ML, GC, SC-SM	A-2-4, A-4, A-6	0	0-2	70-95	50-90	40-80	30-70	21-32	6-12
CnG:												
Conquista-------	0-11	Clay	CH	A-7-6	0	0	95-100	95-100	85-100	65-85	56-71	33-45
	11-80	Stratified gravelly fine sandy loam to gravelly loam	CL, CL-ML, GC, SC-SM	A-2-4, A-4, A-6	0	0-2	70-95	50-90	40-80	30-70	21-32	6-12
CoA:												
Cost------------	0-3	Loamy fine sand	SC-SM, SM	A-2-4	0	0	95-100	95-100	50-75	20-35	16-28	NP-7
	3-30	Clay loam, clay	CH, CL	A-7-6	0	0	95-100	90-100	90-100	65-95	45-67	30-45
	30-80	Stratified fine sand to loam	CL, ML, SC, SM	A-4, A-6	0	0	97-100	95-100	80-100	35-80	18-36	3-18
CpB:												
Coy-------------	0-7	Clay loam	CH, CL	A-6, A-7-6	0	0	98-100	97-100	95-100	70-85	35-55	18-30
	7-44	Clay, clay loam, sandy clay	CH, CL	A-7-6	0	0	98-100	97-100	95-100	70-90	42-62	27-42
	44-80	Clay, silty clay	CH, CL	A-7-6	0	0	98-100	97-100	95-100	70-90	40-60	25-40

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
CrB:												
Crockett--------	0-7	Fine sandy loam	CL, ML, SC, SM	A-4, A-6	0	0-2	98-100	94-100	89-100	40-96	15-35	3-15
	7-35	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	60-98	35-59	23-42
	35-47	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	65-98	35-59	23-42
	47-59	Clay loam, sandy clay loam, clay	CH, CL	A-6, A-7	0	0-5	90-100	85-100	75-100	50-90	30-60	15-40
	59-80	Stratified loam to clay	CH, CL	A-7	0	0-5	90-100	90-100	90-100	70-99	45-71	27-52
CrC2:												
Crockett, eroded	0-3	Fine sandy loam	CL, ML, SC, SM	A-4, A-6	0	0-2	98-100	94-100	89-100	40-96	15-35	3-15
	3-14	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	60-98	35-59	23-42
	14-36	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	65-98	35-59	23-42
	36-58	Clay loam, sandy clay loam, clay	CH, CL	A-6, A-7	0	0-5	90-100	85-100	75-100	50-90	30-60	15-40
	58-80	Stratified loam to clay loam to clay	CH, CL	A-7	0	0-5	90-100	90-100	90-100	70-99	45-71	27-52
CsB:												
Crockett--------	0-6	Gravelly fine sandy loam	GC, GM, SC, SM	A-4, A-6	0	0-15	65-85	60-80	55-65	35-49	15-35	3-15
	6-23	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	60-98	35-59	23-42
	23-45	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	65-98	35-59	23-42
	45-56	Clay, clay loam, sandy clay loam	CH, CL	A-6, A-7	0	0-5	90-100	85-100	75-100	50-90	30-60	15-40
	56-80	Stratified loam to clay	CH, CL	A-7	0	0-5	90-100	90-100	90-100	70-99	45-71	27-52

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
CsC2:												
Crockett, eroded	0-3	Gravelly fine sandy loam	GC, GM, SC, SM	A-4, A-6	0	0-15	65-85	60-80	55-65	35-49	15-35	3-15
	3-22	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	60-98	35-59	23-42
	22-43	Clay, clay loam, sandy clay	CH, CL	A-6, A-7	0	0	89-100	75-100	75-100	65-98	35-59	23-42
	43-57	Clay, clay loam, sandy clay loam	CH, CL	A-6, A-7	0	0-5	90-100	85-100	75-100	50-90	30-60	15-40
	57-80	Stratified loam to clay	CH, CL	A-7	0	0-5	90-100	90-100	90-100	70-99	45-71	27-52
CuB:												
Cuero-----------	0-12	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	95-100	95-100	70-85	40-55	0-25	NP-7
	12-39	Sandy clay loam, clay loam	CL, SC	A-6, A-7	0	0	95-100	95-100	80-100	40-80	30-45	11-22
	39-64	Sandy clay loam, clay loam	CL, SC	A-6	0	0	85-100	85-100	80-90	36-55	30-40	11-20
	64-80	Variable			---	---	---	---	---	---	---	---
DeA:												
Degola----------	0-18	Loam	CL, SC	A-6	0	0	95-100	95-100	80-100	40-80	28-40	11-18
	18-80	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	95-100	95-100	70-100	40-80	28-40	11-18
DfA:												
Degola----------	0-25	Clay loam	CL, SC	A-6	0	0	95-100	95-100	80-100	40-80	28-40	11-18
	25-80	Sandy clay loam, clay loam, loam fine sandy loam	CL, SC	A-6	0	0	95-100	95-100	70-100	40-80	28-40	11-18
DmB:												
Dimebox---------	0-17	Clay	CH	A-7-5, A-7-6	0	0	90-100	90-100	90-100	85-96	51-90	27-55
	17-64	Clay, silty clay	CH	A-7-5, A-7-6	0	0	90-100	90-100	90-100	85-96	51-90	27-55
	64-80	Clay	CH	A-7-5, A-7-6	0	0	90-100	90-100	85-100	75-96	51-90	30-57

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
DyC2:												
Dreyer, eroded--	0-3	Clay	CH	A-7-6	0	0	95-100	90-100	85-100	80-100	55-85	35-60
	3-43	Clay, silty clay	CH	A-7-6	0	0	95-100	90-100	85-100	80-100	55-85	35-60
	43-80	Clay, silty clay	CH	A-7-6	0	0	95-100	90-100	85-100	80-100	55-85	35-60
DyE:												
Dreyer----------	0-7	Clay	CH	A-7-6	0	0	95-100	90-100	85-100	80-100	55-85	35-60
	7-42	Clay, silty clay	CH	A-7-6	0	0	95-100	90-100	85-100	80-100	55-85	35-60
	42-80	Clay, silty clay	CH	A-7-6	0	0	95-100	90-100	85-100	80-100	55-85	35-60
EcB:												
Ecleto----------	0-4	Sandy clay loam	CH, CL, SC	A-6, A-7-6	0	0	100	85-100	85-100	35-55	34-55	15-32
	4-18	Clay loam, clay, sandy clay, gravelly sandy clay loam	CH	A-7-6	0	0	100	75-100	75-100	55-65	52-69	30-43
	18-80	Stratified weathered bedrock			---	---	---	---	---	---	---	---
EcC:												
Ecleto----------	0-4	Sandy clay loam	CH, CL, SC	A-6, A-7-6	0	0	100	85-100	85-100	35-55	34-55	15-32
	4-18	Clay, sandy clay, clay loam	CH	A-7-6	0	0	100	75-100	75-100	55-65	52-69	30-43
	18-80	Stratified weathered bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
EdB:												
Edge------------	0-11	Fine sandy loam	SM, CL-ML, ML, SC-SM	A-4	0	0	98-100	96-100	80-100	45-75	15-30	NP-7
	11-43	Clay, sandy clay	CH, CL	A-7-6	0	0	98-100	97-100	90-100	70-98	48-65	29-42
	43-52	Sandy clay, clay loam	CL	A-6, A-7-6	0-5	0	98-100	96-100	90-100	65-96	30-49	14-30
	52-59	Sandy clay loam, fine sandy loam, clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0-10	0	95-100	90-100	72-100	48-78	18-45	4-25
	59-80	Stratified fine sandy loam to sandy clay loam to channery clay	CH, CL, SC	A-2-6, A-2-7, A-6	0	0	95-100	90-100	72-100	29-80	25-51	11-34
EdC2:												
Edge, eroded----	0-6	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	98-100	96-100	80-100	45-75	15-30	NP-7
	6-12	Clay, sandy clay	CH, CL	A-7-6	0	0	98-100	97-100	90-100	70-98	48-65	29-42
	12-32	Sandy clay, clay loam, clay	CL	A-6, A-7-6	0-5	0	98-100	96-100	90-100	65-96	30-49	14-30
	32-40	Sandy clay loam, fine sandy loam, clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0-10	0	95-100	90-100	72-100	48-78	18-45	4-25
	40-80	Stratified fine sandy loam to channery clay	CH, CL, SC	A-2-6, A-2-7, A-6	0	0	95-100	90-100	72-100	29-80	25-51	11-34

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
EdD3: Edge, severely eroded---------	0-3	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	98-100	96-100	80-100	45-75	15-30	NP-7
	3-45	Clay, sandy clay	CH, CL	A-7-6	0	0	98-100	97-100	90-100	70-98	48-65	29-42
	45-50	Clay, clay loam, sandy clay	CL	A-6, A-7-6	0-5	0	98-100	96-100	90-100	65-96	30-49	14-30
	50-53	Clay loam, sandy clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0-10	0	95-100	90-100	72-100	48-78	18-45	4-25
	53-80	Stratified fine sandy loam to sandy clay loam to clay	CH, CL, SC	A-2-6, A-2-7, A-6	0	0	95-100	90-100	72-100	29-80	25-51	11-34
EdE2: Edge------------	0-4	Fine sandy loam	SC-SM, SM	A-2-4	0	0	85-100	50-75	40-60	25-35	16-25	NP-7
	4-15	Clay, sandy clay	CH, CL	A-7-6	0	0	98-100	97-100	90-100	70-98	48-65	29-42
	15-40	Clay, clay loam, sandy clay	CL	A-6, A-7-6	0	0	98-100	96-100	90-100	65-96	30-49	14-30
	40-56	Sandy clay loam, fine sandy loam, clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0	0	95-100	90-100	72-100	48-78	18-45	4-25
	56-80	Stratified fine sandy loam to sandy clay loam to clay	CH, CL, SC	A-2-6, A-2-7, A-6, A-7	0	0	95-100	90-100	72-100	29-80	25-51	11-34

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
EgC:												
Edge-------------	0-3	Gravelly fine sandy loam, fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	98-100	96-100	80-100	45-75	15-30	NP-7
	3-28	Clay, sandy clay	CH, CL	A-7-6	0	0	98-100	97-100	90-100	70-98	48-65	29-42
	28-33	Clay, sandy clay, clay loam	CL	A-6, A-7-6	0-5	0	98-100	96-100	90-100	65-96	30-49	14-30
	33-50	Clay loam, fine sandy loam, sandy clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0-10	0	95-100	90-100	72-100	48-78	18-45	4-25
	50-80	Stratified fine sandy loam to sandy clay loam to clay	CH, CL, SC	A-2-6, A-2-7, A-6	0	0	95-100	90-100	72-100	29-80	25-51	11-34
EgE:												
Edge-------------	0-5	Gravelly fine sandy loam	SC-SM, SM	A-2-4	0	0	85-100	50-75	40-60	25-35	16-25	NP-7
	5-16	Sandy clay, clay	CH, CL	A-7-6	0	0	98-100	97-100	90-100	70-98	48-65	29-42
	16-32	Clay, clay loam, sandy clay	CL	A-6, A-7-6	0	0	98-100	96-100	90-100	65-96	30-49	14-30
	32-48	Clay loam, sandy clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0	0	95-100	90-100	72-100	48-78	18-45	4-25
	48-80	Stratified fine sandy loam to sandy clay loam to clay	CH, CL, SC	A-2-6, A-2-7, A-6, A-7	0	0	95-100	90-100	72-100	29-80	25-51	11-34
EkB:												
Elmendorf--------	0-27	Sandy clay loam, clay loam	CL	A-6, A-7	0	0-2	95-100	90-100	90-100	60-90	30-50	15-28
	27-63	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	90-100	75-95	45-65	25-40
	63-80	Sandy clay loam, clay loam, clay	CH, CL	A-7	0	0-2	95-100	90-100	90-100	70-95	45-60	25-36

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Denhawken-------	0-6	Sandy clay loam, clay loam	CH, CL	A-6, A-7	0	0-2	95-100	90-100	90-100	60-90	35-55	16-33
	6-18	Clay, clay loam, sandy clay loam	CH, CL	A-6, A-7	0	0-2	95-100	90-100	85-100	75-95	35-60	20-38
	18-45	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	85-100	70-95	48-68	25-43
	45-70	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	85-100	70-95	48-68	25-43
	70-80	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	85-100	70-95	48-68	25-43
EkC:												
Elmendorf-------	0-11	Sandy clay loam, clay loam	CL	A-6, A-7	0	0-2	95-100	90-100	90-100	60-90	30-50	15-28
	11-36	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	90-100	75-95	45-65	25-40
	36-80	Clay, clay loam, sandy clay loam	CH, CL	A-7	0	0-2	95-100	90-100	90-100	70-95	45-60	25-36
Denhawken-------	0-5	Sandy clay loam, clay loam	CH, CL	A-6, A-7	0	0-2	95-100	90-100	90-100	60-90	35-55	16-33
	5-21	Clay, clay loam, sandy clay loam	CH, CL	A-6, A-7	0	0-2	95-100	90-100	85-100	75-95	35-60	20-38
	21-42	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	85-100	70-95	48-68	25-43
	42-60	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	85-100	70-95	48-68	25-43
	60-80	Clay, clay loam	CH, CL	A-7	0	0-2	95-100	90-100	85-100	70-95	48-68	25-43
EsB:												
Eloso-----------	0-9	Clay	CH	A-7-6	0	0	100	100	95-100	75-85	56-66	33-41
	9-24	Clay	CH	A-7-6	0	0	100	95-100	95-100	75-95	56-66	33-41
	24-37	Clay, clay loam, silty clay	CH	A-7-6	0	0	100	95-100	90-100	80-95	51-66	29-41
	37-80	Loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	98-100	85-95	70-80	20-30	5-12
FnB:												
Flatonia--------	0-12	Sandy clay loam	CH, CL, SC	A-6, A-7-6	0	0	80-100	80-100	75-100	40-70	39-56	21-34
	12-49	Clay, sandy clay, silty clay	CH, CL	A-7-6	0	0	95-100	90-100	90-100	50-80	46-64	28-41
	49-54	Clay, clay loam, sandy clay	CH, CL	A-6, A-7-6	0	0	95-100	90-100	80-100	60-90	35-56	15-34
	54-80	Bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
FsB:												
Frelsburg-------	0-9	Clay	CH	A-7-6	0	0	95-100	95-100	90-100	85-100	55-90	35-65
	9-72	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	85-100	55-90	35-65
	72-80	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	85-100	55-90	35-65
FsC:												
Frelsburg-------	0-10	Clay	CH	A-7-6	0	0	95-100	95-100	90-100	85-100	55-90	35-65
	10-72	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	85-100	55-90	35-65
	72-80	Clay, silty clay	CH	A-7-6	0	0	95-100	95-100	90-100	85-100	55-90	35-65
GfA:												
Ganado----------	0-13	Clay	CH	A-7-6	0	0	100	95-100	80-100	75-100	51-76	31-50
	13-68	Clay	CH	A-7-6	0	0	100	95-100	80-100	75-100	51-76	31-50
	68-80	Clay loam, silty clay loam, sandy clay loam	CH, CL	A-6, A-7-6	0	0	90-100	90-100	75-95	75-95	38-60	21-41
GhC:												
Gholson---------	0-12	Loamy fine sand	SC-SM, SM	A-2-4, A-4	0	0	96-100	96-100	75-95	20-50	16-20	NP-4
	12-62	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	96-100	96-100	75-100	40-70	26-40	11-22
	62-80	Fine sandy loam, loam, sandy clay loam, clay loam	SC, CL	A-6	0	0	96-100	75-100	65-100	40-70	26-40	11-22

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
GkC:												
Gillett---------	0-5	Fine sandy loam	SC, SC-SM, SM	A-4	0	0-2	95-100	95-100	90-100	40-50	16-25	3-10
	5-27	Clay, clay loam, sandy clay	CH	A-7-6	0	0	100	100	95-100	60-70	56-71	33-45
	27-34	Sandy clay loam, gravelly clay loam, gravelly sandy clay loam	GC, SC	A-7-6	0	0-2	55-85	55-80	50-80	40-50	41-66	21-41
	34-80	Stratified bedrock, fine sandy loam, very fine sandy loam	SC, SC-SM, SM	A-4	0	0-5	95-100	95-100	90-100	35-45	16-26	NP-9
GkF:												
Gillett---------	0-4	Fine sandy loam	SC, SC-SM	A-2-4, A-2-6, A-4	5-15	5-15	75-90	70-85	50-75	25-50	24-35	7-16
	4-23	Sandy clay, clay loam, clay	CH	A-7-6	0	0	100	100	95-100	60-70	56-71	33-45
	23-34	Sandy clay loam, gravelly clay loam, gravelly sandy clay	GC, SC	A-7-6	0	0-2	55-85	50-80	50-70	40-50	41-66	21-41
	34-80	Stratified bedrock, fine sandy loam, very fine sandy loam	SC, SC-SM, SM	A-4	0	0-5	95-100	95-100	90-100	35-45	11-23	NP-10
GP:												
Pits------------	0-80	Variable			---	---	---	---	---	---	0-14	---
GrB:												
Greenvine-------	0-8	Clay	CH	A-7-6	0	0	100	95-100	90-100	75-98	55-75	32-50
	8-28	Clay, silty clay	CH	A-7-6	0	0	100	95-100	90-100	75-98	55-92	32-62
	28-38	Clay, silty clay	CH	A-7-6	0	0	100	100	90-100	75-98	55-92	32-62
	38-80	Bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
GrC:												
Greenvine-------	0-11	Clay	CH	A-7-6	0	0	100	95-100	90-100	75-98	55-75	32-50
	11-20	Clay, silty clay	CH	A-7-6	0	0	100	95-100	90-100	75-98	55-92	32-62
	20-38	Clay, silty clay	CH	A-7-6	0	0	100	100	90-100	75-98	55-92	32-62
	38-80	Bedrock			---	---	---	---	---	---	---	---
GtB:												
Griter----------	0-7	Fine sandy loam	SM, SC-SM, SC	A-2-4, A-4	0	0	95-100	95-100	90-100	15-45	16-28	NP-10
	7-37	Sandy clay, clay	CH, CL, SC	A-7-6	0	0	95-100	95-100	90-100	45-70	41-55	20-32
	37-80	Sandy clay loam, sandy clay	CL, SC	A-6, A-7-6	0	0	95-100	90-100	90-100	36-70	30-50	15-28
GtC2:												
Griter, eroded--	0-2	Fine sandy loam	SC, SC-SM, SM	A-2-4, A-4	0	0	95-100	95-100	90-100	15-45	16-28	NP-10
	2-51	Clay, sandy clay	CH, CL, SC	A-7-6	0	0	95-100	95-100	90-100	45-70	41-55	20-32
	51-80	Sandy clay loam, sandy clay	CL, SC	A-6, A-7-6	0	0	95-100	90-100	90-100	36-70	30-50	15-28
GU:												
Gullied land----	0-80	Variable			---	---	---	---	---	---	---	---
ImA:												
Imogene---------	0-4	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	95-100	70-95	40-70	0-30	NP-15
	4-38	Sandy clay loam, clay loam, sandy clay	CL, SC	A-6, A-7-6	0	0	100	95-100	80-100	45-75	26-48	11-24
	38-68	Clay loam, sandy clay loam	CL, SC	A-6, A-7-6	0	0	95-100	90-100	75-95	40-70	26-43	11-25
	68-80	Sandy clay loam, loam, clay loam, fine sandy loam	CL, SC	A-6	0	0	90-100	85-100	75-95	40-70	26-37	11-21

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
JsC:												
Jedd	0-12	Gravelly fine sandy loam	GC-GM, GM, SM	A-2-4, A-4	0	0-4	50-85	50-78	35-70	25-45	16-30	NP-7
	12-37	Clay, sandy clay, sandy clay loam	CH, CL, MH, ML	A-6, A-7-5, A-7-6	0	0-4	90-100	90-100	70-100	51-87	35-61	15-29
	37-80	Bedrock			---	---	---	---	---	---	---	---
JsE:												
Jedd	0-12	Gravelly fine sandy loam	GC-GM, GM, SM	A-2-4, A-4	0	0-4	50-85	50-78	35-70	25-45	16-30	NP-7
	12-30	Clay, sandy clay, sandy clay loam	CH, CL, MH, ML	A-6, A-7-5, A-7-6	0	0-4	90-100	90-100	70-100	51-87	35-61	15-29
	30-80	Bedrock			---	---	---	---	---	---	---	---
KuB:												
Kurten	0-5	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0-2	95-100	95-100	85-100	34-80	15-30	NP-7
	5-35	Clay, silty clay, clay loam	CH, CL	A-7-6	0	0-2	95-100	95-100	89-100	65-95	41-59	25-42
	35-50	Clay, silty clay, clay loam	CH, CL	A-7-6	0	0-1	95-100	95-100	89-100	65-95	41-59	25-42
	50-80	Clay loam, clay, loam	CH, CL	A-6, A-7-6	0	0-1	95-100	95-100	89-100	60-90	35-59	20-40
LeB:												
Leming	0-15	Loamy fine sand	SC-SM, SM	A-2-4	0	0	95-100	95-100	50-75	20-35	16-28	NP-7
	15-29	Loamy fine sand, fine sand	SC-SM, SM	A-2-4	0	0	95-100	95-100	50-85	20-35	16-28	NP-7
	29-49	Sandy clay, clay loam, clay	CL, SC	A-6, A-7-6	0	0-10	95-100	90-100	80-95	40-60	30-45	11-25
	49-66	Sandy clay, sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0	0-10	95-100	90-100	80-95	40-60	30-45	11-25
	66-80	Sandy clay loam, fine sandy loam, loam	CL-ML, ML, SC-SM	A-4, A-6	0	0-5	95-100	95-100	70-95	40-70	21-34	NP-12

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
LkA:												
Luckenbach------	0-16	Sandy clay loam	CL, SC	A-6	0	0-3	98-100	95-100	80-90	40-55	30-37	11-18
	16-56	Clay, clay loam	CH, CL	A-7	0	0-3	80-100	75-100	70-100	60-85	40-55	22-35
	56-80	Clay loam, clay	CL	A-6, A-7	0	0-5	70-100	70-100	65-95	50-85	35-45	20-30
LkB:												
Luckenbach------	0-12	Sandy clay loam	CL, SC	A-6	0	0-3	98-100	95-100	80-90	40-55	30-37	11-18
	12-26	Clay loam, clay	CH, CL	A-7	0	0-3	80-100	75-100	70-100	60-85	40-55	22-35
	26-80	Clay, clay loam	CL	A-6, A-7	0	0-5	70-100	70-100	65-95	50-85	35-45	20-30
LuB:												
Luling----------	0-14	Clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	14-42	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	42-63	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	63-80	Clay, silty	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
LuC:												
Luling----------	0-9	Clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	9-51	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	51-55	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	55-80	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
LuC2:												
Luling, eroded--	0-3	Clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	3-51	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	51-60	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
	60-80	Clay, silty clay	CH	A-7-6	0	0-2	95-100	90-100	80-100	65-98	51-70	30-45
MaA:												
Mabank----------	0-7	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	95-100	95-100	80-98	40-70	19-32	4-15
	7-57	Clay, clay loam	CH, CL	A-6, A-7	0	0	95-100	95-100	95-100	60-85	38-55	22-37
	57-80	Clay, clay loam	CH, CL	A-6, A-7	0	0	95-100	95-100	95-100	60-85	38-55	22-37

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MeA:												
Meguin----------	0-16	Silty clay loam	CL	A-6, A-7-6	0	0	95-100	95-100	90-100	75-95	35-48	16-25
	16-80	Silt loam, silty clay loam, clay loam	CL	A-6, A-7-6	0	0	95-100	90-100	90-100	75-95	30-48	11-25
MfA:												
Meguin----------	0-13	Silty clay loam	CL	A-6, A-7-6	0	0	95-100	95-100	90-100	75-95	35-48	16-25
	13-80	Silt loam, silty clay loam, clay loam	CL	A-6, A-7-6	0	0	95-100	90-100	90-100	75-95	30-48	11-25
MoB:												
Monteola--------	0-14	Clay	CH	A-7-6	0	0-3	98-100	95-100	80-100	75-90	51-75	30-50
	14-41	Clay	CH	A-7-6	0	0-3	90-100	80-100	75-100	75-96	56-80	33-54
	41-70	Clay	CH	A-7-6	0	0-3	90-100	80-100	75-100	75-96	56-80	33-54
	70-80	Clay	CH	A-7-6	0	0-3	90-100	80-100	75-100	75-96	56-80	33-54
MoC:												
Monteola--------	0-7	Clay	CH	A-7-6	0	0-3	98-100	95-100	80-100	75-90	51-75	30-50
	7-51	Clay	CH	A-7-6	0	0-3	90-100	80-100	75-100	75-96	56-80	33-54
	51-70	Clay	CH	A-7-6	0	0-3	90-100	80-100	75-100	75-96	56-80	33-54
	70-80	Clay	CH	A-7-6	0	0-3	90-100	80-100	75-100	75-96	56-80	33-54
NaA:												
Navasota--------	0-7	Clay	CH, CL	A-7	0	0	100	100	95-100	85-95	48-75	25-50
	7-25	Clay, silty clay	CH	A-7	0	0	100	100	95-100	85-95	51-75	30-50
	25-80	Clay, sandy clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	50-85	48-75	25-50
NmB:												
Normangee-------	0-6	Sandy clay loam	CL	A-6, A-7	0	0	98-100	96-100	90-100	65-95	30-48	11-27
	6-53	Clay, clay loam	CH, CL	A-7	0	0	98-100	98-100	90-100	65-96	44-80	22-58
	53-80	Stratified clay	CH, CL	A-7	0	0	95-100	90-100	90-100	65-90	41-60	20-35
NmC:												
Normangee-------	0-6	Sandy clay loam	CL	A-6, A-7	0	0	98-100	96-100	90-100	65-95	30-48	11-27
	6-53	Clay, clay loam	CH, CL	A-7	0	0	98-100	98-100	90-100	65-96	44-80	22-58
	53-80	Stratified clay	CH, CL	A-7	0	0	95-100	90-100	90-100	65-90	41-60	20-35

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
NuC:												
Nusil-----------	0-24	Loamy fine sand	SM	A-2-4	0	0	100	100	50-80	15-35	0-14	NP-3
	24-35	Loamy fine sand, fine sand	SM	A-2-4	0	0	100	100	50-80	15-35	16-22	NP-3
	35-49	Sandy clay loam, fine sandy loam	CL, SC	A-4, A-6	0	0	100	100	80-90	35-55	25-38	8-15
	49-57	Sandy clay loam, fine sandy loam	CL, SC	A-4, A-6	0	0	100	100	80-90	35-55	25-38	8-15
	57-80	Sandy clay loam, fine sandy loam	CL, SC	A-2, A-4, A-6	0	0	100	100	70-90	30-55	20-35	8-15
PaC:												
Padina----------	0-15	Loamy fine sand	SC-SM, SM	A-2-4	0	0	100	95-100	85-100	15-35	16-25	NP-5
	15-49	Loamy fine sand, fine sand	SC-SM, SM, SP-SM	A-2-4, A-3	0	0	100	95-100	85-100	8-28	16-25	NP-5
	49-80	Sandy clay loam, fine sandy loam	CL, SC	A-2, A-4, A-6, A-7	0	0	90-100	90-100	90-100	25-65	22-42	8-22
PbA:												
Papalote--------	0-14	Loamy fine sand	SC-SM, SM	A-2-4, A-4	0	0	95-100	90-100	50-100	20-50	16-25	NP-6
	14-39	Sandy clay, clay, clay loam	CH, CL, SC	A-7-6	0	0	95-100	90-100	85-100	43-70	41-61	21-36
	39-80	Sandy clay loam, clay loam, sandy clay	CL, SC	A-6, A-7-6	0	0	95-100	80-100	75-96	36-70	35-49	18-31
PbB:												
Papalote--------	0-7	Fine sandy loam	CL-ML, SC, SC-SM, SM	A-4	0	0	95-100	95-100	90-100	40-60	16-25	NP-8
	7-49	Clay, sandy clay, clay loam	CH, CL, SC	A-7-6	0	0	95-100	90-100	85-100	43-70	41-61	21-36
	49-80	Sandy clay loam, clay loam, sandy clay	CL, SC	A-6, A-7-6	0	0	95-100	80-100	75-96	36-70	35-49	18-31

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
PkB:												
Pavelek---------	0-11	Clay	CH	A-7-6	0	0	95-100	75-100	75-100	70-80	56-66	33-41
	11-17	Gravelly clay loam, gravelly clay	CH, GC, SC	A-7-6	0	0	65-75	60-70	55-65	45-55	51-66	29-41
	17-25	Cemented material			0	0	---	---	---	---	0-14	---
	25-80	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	98-100	85-95	70-80	20-30	5-12
RhC:												
Rhymes----------	0-25	Fine sand	SM	A-2-4	0	0	100	100	50-80	15-35	16-20	NP-3
	25-48	Fine sand, loamy sand, loamy fine sand	SM	A-2-4	0	0	100	100	50-80	15-35	16-20	NP-3
	48-80	Sandy clay loam, fine sandy loam	SC, CL	A-4, A-6	0	0	100	100	80-90	35-55	25-38	8-15
RoB:												
Rosanky---------	0-12	Fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0-2	80-100	75-100	75-100	30-50	15-25	NP-7
	12-27	Clay, sandy clay	CH, CL, SC	A-6, A-7-6	0	0-2	85-100	75-100	75-100	49-90	37-56	19-34
	27-70	Clay loam, sandy clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-5	80-100	75-100	75-100	45-70	23-40	5-19
	70-80	Bedrock			---	---	---	---	---	---	---	---
RoC2:												
Rosanky, eroded-	0-3	Fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0-2	80-100	75-100	75-100	30-50	15-25	NP-7
	3-46	Clay, sandy clay, clay loam	CH, CL, SC	A-6, A-7-6	0	0-2	85-100	75-100	75-100	49-90	37-56	19-34
	46-60	Clay loam, sandy clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-5	80-100	75-100	75-100	45-70	23-40	5-19
	60-80	Bedrock			---	---	---	---	---	---	---	---
RsB:												
Rosenbrock------	0-8	Clay	CH	A-7-6	0	0	100	100	95-100	80-90	56-66	33-41
	8-59	Clay, silty clay	CH	A-7-6	0	0	100	100	95-100	85-95	61-76	36-49
	59-80	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	98-100	85-95	70-80	20-30	5-12

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
RvA:												
Rutersville-----	0-12	Loamy fine sand	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0-1	90-100	90-100	60-90	30-60	16-25	NP-5
	12-30	Sandy clay loam, sandy clay, clay loam	CH, CL, SC	A-7-6	0	0-1	90-100	90-100	75-100	45-65	41-65	25-40
	30-46	Sandy clay loam, loam, fine sandy loam	CH, CL, SC	A-6, A-7-6	0	0-1	95-100	95-100	75-100	45-70	36-55	21-33
	46-58	Fine sandy loam, sandy loam, loam, sandy clay loam	CH, CL, SC	A-6, A-7-6	0	0-1	95-100	95-100	75-100	45-70	36-55	21-33
	58-80	Bedrock			---	---	---	---	---	---	---	---
SaD:												
Sarnosa---------	0-10	Fine sandy loam	SC	A-2-6, A-2-7, A-6	0	0	95-100	95-100	70-95	20-45	30-45	11-25
	10-63	Fine sandy loam, loam, sandy clay loam	SC	A-2-6, A-2-7, A-6	0	0	95-100	95-100	70-90	20-45	30-45	11-25
	63-80	Fine sandy loam, loam, sandy clay loam	SC, SC-SM	A-2-4, A-4	0	0	80-100	80-100	60-85	20-40	20-30	4-10
ScC:												
Schattel--------	0-6	Clay loam	CL	A-6, A-7-6	0	0-1	96-100	96-100	70-100	55-80	36-48	16-25
	6-52	Clay, clay loam	CH, CL	A-7-6	0	0	96-100	96-100	70-100	65-95	43-62	21-36
	52-80	Clay, silty clay, clay loam	CH, CL	A-7-6	0	0	96-100	96-100	65-100	60-95	48-70	27-48
ShC:												
Shalba----------	0-5	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	95-100	95-100	70-98	40-60	15-25	NP-7
	5-18	Clay	CH	A-7	0	0	95-100	95-100	90-100	75-95	51-70	34-48
	18-80	Bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SnC:												
Shiner	0-8	Fine sandy loam	SC, SC-SM	A-2-4, A-2-6, A-4	0	0-5	75-100	75-100	45-75	20-50	20-30	6-15
	8-16	Sandy clay loam, fine sandy loam, gravelly fine sandy loam	SC, GC, GC-GM, GP-GC	A-2-4, A-2-6, A-4	0	0-10	50-85	50-85	30-70	10-40	20-30	6-15
	16-80	Stratified weathered bedrock to fine sandy loam			---	---	---	---	---	---	16-19	NP-4
SnE:												
Shiner	0-8	Fine sandy loam	SC, SC-SM	A-2-4, A-2-6, A-4	0	0-5	75-100	75-100	45-75	20-50	20-30	6-15
	8-16	Sandy clay loam, fine sandy loam, gravelly fine sandy loam	GC, GC-GM, GP-GC, SC	A-2-4, A-2-6, A-4	0	0-10	50-85	50-85	30-70	10-40	20-30	6-15
	16-35	Stratified weathered bedrock to fine sandy loam			---	---	---	---	---	---	16-19	NP-4
	35-80	Fine sandy loam	SC, SC-SM	A-2-4, A-2-6, A-4	0	0-2	80-100	75-100	45-75	20-50	20-30	6-15
SoC:												
Shiro	0-8	Loamy fine sand	SC-SM, SM	A-2-4, A-4	0	0	95-100	95-100	60-95	15-40	15-25	NP-7
	8-12	Clay, sandy clay, clay loam	CH, CL	A-7-6	0	0	95-100	95-100	85-100	51-95	45-65	23-38
	12-34	Clay, sandy clay, clay loam	CH, CL, SC	A-7-6	0	0	95-100	95-100	75-100	40-70	45-65	25-38
	34-80	Bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SsC:												
Silstid	0-26	Loamy fine sand	SM, SP-SM	A-2-4, A-3	0	0-1	90-100	85-100	80-100	9-25	16-25	NP-3
	26-30	Loamy fine sand, fine sand	SM, SP-SM	A-2, A-3	0	0-1	90-100	85-100	80-100	9-25	16-25	NP-3
	30-54	Sandy clay loam, loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-2-4, A-2-6, A-4, A-6	0	0-1	90-100	85-100	75-100	30-55	20-43	4-26
	54-80	Sandy clay loam, loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-2-4, A-2-6, A-4, A-6	0	0-1	90-100	80-100	70-100	22-55	20-43	4-25
SvD:												
Silvern	0-69	Very gravelly loamy fine sand, very gravelly loamy sand	GP, GP-GM	A-1	0	5-30	20-45	15-40	7-25	2-11	15-20	NP-5
	69-80	Very gravelly sandy clay loam, gravelly sandy clay loam, very gravelly sandy loam	GC, GP-GC, SC, SP-SC	A-2-6, A-2-7	0	5-25	25-60	20-55	15-35	8-30	28-50	11-33
SwA:												
Singleton	0-12	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	95-100	90-100	70-95	40-60	16-25	NP-7
	12-30	Clay	CH	A-7-6	0	0	95-100	90-100	90-100	75-95	51-70	34-48
	30-35	Clay loam, clay, sandy clay	CH, CL	A-7-6	0	0	95-100	90-100	85-100	51-95	45-60	23-36
	35-80	Bedrock			---	---	---	---	---	---	---	---

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SwC:												
Singleton-------	0-7	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	95-100	90-100	70-95	40-60	16-25	NP-7
	7-21	Clay	CH	A-7-6	0	0	95-100	90-100	90-100	75-95	51-70	34-48
	21-33	Clay loam, clay, sandy clay	CH, CL	A-7-6	0	0	95-100	90-100	85-100	51-95	45-60	23-36
	33-37	Sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0	0	95-100	90-100	80-100	40-80	35-49	15-25
	37-80	Bedrock			---	---	---	---	---	---	---	---
SxB:												
Styx------------	0-12	Loamy fine sand	SC-SM, SM	A-2-4, A-4	0	0	100	100	70-100	15-40	0-25	NP-4
	12-27	Loamy fine sand, fine sand	SC-SM, SM	A-2-4, A-4	0	0	100	100	70-100	15-40	0-25	NP-4
	27-80	Sandy clay loam, clay loam	SC, CL	A-4, A-6	0	0	100	100	80-100	36-70	20-40	8-20
SyC:												
Sunev-----------	0-9	Loam	CL, SC	A-4, A-6	0	0	90-100	80-100	70-100	45-70	25-35	8-16
	9-45	Clay loam, loam, silty clay loam	CL	A-4, A-6	0	0	85-100	80-100	70-100	51-85	28-40	8-20
	45-80	Loam, clay loam, silty clay loam	CL	A-4, A-6, A-7-6	0	0	80-100	70-100	65-100	51-70	25-42	8-22
SyE:												
Sunev-----------	0-15	Loam	CL, SC	A-4, A-6	0	0	90-100	80-100	70-100	45-70	25-35	8-16
	15-34	Loam, clay loam, silty clay loam	CL	A-4, A-6	0	0	85-100	80-100	70-100	51-85	28-40	8-20
	34-80	Loam, clay loam, silty clay loam	CL	A-6, A-7-6, A-4	0	0	80-100	70-100	65-100	51-70	25-42	8-22

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
TbA:												
Tabor-----------	0-13	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	85-100	75-100	70-100	30-55	15-25	NP-7
	13-46	Clay	CH, CL	A-7	0	0	95-100	90-100	85-100	55-90	45-65	25-40
	46-80	Clay loam, sandy clay loam, clay	CH, CL, SC	A-6, A-7	0	0	95-100	90-100	75-100	40-90	35-60	15-35
TbB:												
Tabor-----------	0-6	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	85-100	75-100	70-100	30-55	15-25	NP-7
	6-64	Clay	CH, CL	A-7	0	0	95-100	90-100	85-100	55-90	45-65	25-40
	64-80	Clay loam, sandy clay loam, clay	CH, CL, SC	A-6, A-7	0	0	95-100	90-100	75-100	40-90	35-60	15-35
TnA:												
Tinn------------	0-7	Clay	CH, CL	A-7	0	0	95-100	95-100	85-100	80-100	45-75	25-54
	7-39	Clay, silty clay	CH	A-7	0	0	95-100	90-100	80-100	80-100	55-75	35-54
	39-80	Clay, silty clay	CH	A-7	0	0	95-100	90-100	80-100	80-100	55-75	35-54
ToA:												
Tinn------------	0-8	Clay	CH, CL	A-7	0	0	95-100	95-100	85-100	80-100	45-75	25-54
	8-29	Clay, silty clay	CH	A-7	0	0	95-100	90-100	80-100	80-100	55-75	35-54
	29-80	Clay, silty clay	CH	A-7	0	0	95-100	90-100	80-100	80-100	55-75	35-54
TrB:												
Tordia----------	0-14	Clay	CH	A-7-6	0	0-2	95-100	95-100	90-100	75-90	55-75	31-48
	14-36	Clay	CH	A-7-6	0	0-2	95-100	95-100	90-100	75-95	55-75	31-48
	36-44	Clay	CH	A-7-6	0	0-2	95-100	95-100	90-100	85-95	55-75	31-48
	44-80	Clay, silty clay	CH	A-7-6	0	0-5	95-100	95-100	90-100	85-95	55-75	31-48
TtC:												
Tremona---------	0-30	Loamy fine sand	SC-SM, SM, SP-SM	A-2-4, A-3	0	0	80-100	80-100	60-100	8-35	0-16	NP-5
	30-56	Sandy clay, clay	CH, CL, SC	A-7	0	0	80-100	80-100	75-100	36-85	40-60	20-40
	56-80	Sandy clay loam, sandy clay, clay loam	SC, CH, CL	A-2-7, A-6, A-7	0	0	80-100	80-100	70-100	30-85	30-60	15-40

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
W:												
Water	---	---	---	---	---	---	---	---	---	---	---	---
WaA:												
Waelder	0-14	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-99	60-75	16-25	4-11
	14-57	Loamy fine sand, very fine sandy loam, loam	CL, CL-ML, SC	A-4, A-6	0	0	100	95-100	65-100	40-65	16-25	4-11
	57-64	Fine sandy loam, loamy fine sand, very fine sandy loam, loam	SC, SC-SM	A-2-4, A-2-6, A-4	0	0	100	95-100	65-98	30-50	16-25	4-11
	64-80	Loamy fine sand, very fine sandy loam, sandy clay loam	SC, SC-SM	A-2-4, A-2-6, A-4	0	0	100	95-100	65-96	30-50	16-25	4-11
WeA:												
Waelder	0-16	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-99	60-75	16-25	4-11
	16-51	Very fine sandy loam, loamy fine sand, loam	CL-ML, SC, CL	A-4, A-6	0	0	100	95-100	65-100	40-65	16-25	4-11
	51-78	Loamy fine sand, very fine sandy loam, loam	SC, SC-SM	A-2-4, A-2-6, A-4	0	0	100	95-100	65-98	30-50	16-25	4-11
	78-80	Sandy clay loam, loamy fine sand, very fine sandy loam	SC, SC-SM	A-2-4, A-2-6, A-4	0	0	100	95-100	65-96	30-50	16-25	4-11
WsC:												
Weesatche	0-11	Fine sandy loam	CL, SC	A-2-4, A-2-6, A-6	0	0	95-100	95-100	65-98	28-65	20-30	8-15
	11-56	Sandy clay loam, clay loam	CL, SC	A-2-6, A-6, A-7	0	0	95-100	95-100	65-98	28-75	30-42	15-26
	56-80	Fine sandy loam, sandy clay loam, loam	CL, SC	A-2-6, A-6	0	0	95-100	95-100	55-100	28-80	25-40	11-24

Table 25.--Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WwA:												
Wilson----------	0-5	Clay loam	CL	A-6, A-7-6	0	0	95-100	85-100	80-100	60-96	38-49	20-30
	5-66	Clay, silty clay, clay loam	CH, CL	A-7-6	0	0	90-100	80-100	80-100	65-96	43-56	26-37
	66-80	Clay, silty clay, silty clay loam	CH, CL	A-6, A-7-6	0	0	95-100	90-100	85-100	70-96	38-65	24-48
ZkB:												
Zack------------	0-10	Fine sandy loam	ML, SM	A-4	0	0-1	90-100	90-100	70-95	40-65	20-30	NP-7
	10-20	Clay	CH	A-7-6	0	0-1	90-100	90-100	90-100	75-95	50-70	30-45
	20-30	Clay, clay loam	CH, CL	A-7-6	0	0-1	90-100	90-100	90-100	70-95	42-60	25-38
	30-38	Clay loam, silty clay loam, sandy clay loam	CL	A-6, A-7-6	0	0-1	90-100	90-100	80-95	51-90	30-42	11-20
	38-80	Clay loam, loam, silty clay loam	CL	A-4, A-6	0	0-1	90-100	90-100	80-100	51-90	26-40	8-20
ZuB:												
Zulch-----------	0-6	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	95-100	95-100	70-100	40-60	15-30	NP-7
	6-32	Clay, clay loam, silty clay	CH, CL	A-7-6	0	0	95-100	95-100	90-100	75-95	44-60	22-32
	32-39	Clay loam, silty clay, clay	CH, CL	A-7-6	0	0	95-100	95-100	90-100	75-95	44-66	22-36
	39-80	Clay loam, clay	CH, CL	A-7-6	0	0	95-100	95-100	90-100	65-90	44-60	22-32

Table 26.--Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
AmB:												
Alum-----------------	0-30	5-12	1.45-1.55	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	30-52	35-45	1.35-1.50	0.06-0.2	0.12-0.18	3.0-5.9	0.3-1.0	.32	.32			
	52-62	30-45	1.40-1.50	0.06-0.2	0.12-0.18	3.0-5.9	0.1-0.5	.37	.37			
	62-80	15-30	1.40-1.50	0.06-0.6	0.12-0.17	3.0-5.9	0.1-0.5	.28	.43			
ApC:												
Arenosa--------------	0-12	0-3	1.24-1.50	6-20	0.05-0.08	0.0-2.9	0.4-1.0	.15	.15	5	1	250
	12-80	0-3	1.45-1.65	6-20	0.03-0.07	0.0-2.9	0.1-0.5	.15	.15			
ArA:												
Arol-----------------	0-5	6-15	1.40-1.60	0.6-2	0.11-0.17	0.0-2.9	0.5-1.0	.43	.43	3	3	86
	5-33	35-50	1.25-1.45	0.00-0.06	0.10-0.16	6.0-8.9	0.3-1.0	.32	.32			
	33-80	---	---	0.06-0.6	---	---	0.0-0.5	---	---			
ArB:												
Arol-----------------	0-6	6-15	1.40-1.60	0.6-2	0.11-0.17	0.0-2.9	0.5-1.0	.43	.43	3	3	86
	6-38	35-50	1.25-1.45	0.00-0.06	0.10-0.16	6.0-8.9	0.3-1.0	.32	.32			
	38-80	---	---	0.06-0.6	---	---	0.0-0.5	---	---			
AxB:												
Axtell---------------	0-10	7-18	1.40-1.60	0.6-2	0.04-0.08	0.0-2.9	0.5-1.0	.28	.32	5	3	0
	10-41	35-55	1.35-1.60	0.00-0.06	0.07-0.16	6.0-8.9	0.1-0.5	.37	.37			
	41-62	27-50	1.50-1.70	0.00-0.06	0.07-0.16	6.0-8.9	0.1-0.5	.37	.37			
	62-80	25-50	1.50-1.70	0.2-0.6	0.07-0.12	6.0-8.9	0.1-0.5	.37	.37			
AxC:												
Axtell---------------	0-9	7-18	1.40-1.60	0.6-2	0.04-0.08	0.0-2.9	0.5-1.0	.28	.32	5	3	0
	9-45	35-55	1.35-1.60	0.00-0.06	0.07-0.16	6.0-8.9	0.1-0.5	.37	.37			
	45-63	27-50	1.50-1.70	0.00-0.06	0.07-0.16	6.0-8.9	0.1-0.5	.37	.37			
	63-80	25-50	1.50-1.70	0.2-0.6	0.07-0.12	6.0-8.9	0.1-0.5	.37	.37			
AxE:												
Axtell---------------	0-11	7-18	1.40-1.60	0.6-2	0.04-0.08	0.0-2.9	0.5-1.0	.28	.32	5	3	0
	11-43	35-55	1.35-1.60	0.00-0.06	0.07-0.16	6.0-8.9	0.1-0.5	.37	.37			
	43-66	27-50	1.50-1.70	0.00-0.06	0.07-0.16	6.0-8.9	0.1-0.5	.37	.37			
	66-80	25-50	1.50-1.70	0.2-0.6	0.07-0.12	6.0-8.9	0.1-0.5	.37	.37			
BnB:												
Benchley-------------	0-6	20-29	1.30-1.45	0.6-2	0.12-0.20	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	6-49	30-45	1.45-1.60	0.06-0.2	0.12-0.18	6.0-8.9	1.0-2.0	.32	.32			
	49-80	35-55	1.55-1.65	0.06-0.2	0.12-0.18	6.0-8.9	0.5-1.0	.32	.32			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
BoA:												
Bosque---------------	0-11	27-35	1.20-1.40	0.6-2	0.15-0.20	0.0-2.9	1.0-4.0	.28	.28	5	4L	86
	11-54	20-35	1.20-1.40	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.28	.28			
	54-80	20-45	1.20-1.40	0.6-2	0.11-0.18	0.0-2.9	0.5-1.0	.28	.28			
BpA:												
Bosque---------------	0-16	27-35	1.20-1.40	0.6-2	0.15-0.20	0.0-2.9	1.0-4.0	.28	.28	5	4L	86
	16-68	20-35	1.20-1.40	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.28	.28			
	68-80	20-45	1.20-1.40	0.6-2	0.11-0.18	0.0-2.9	0.5-1.0	.28	.28			
Tinn-----------------	0-17	40-60	1.40-1.50	0.06-0.2	0.15-0.20	9.0-25.0	1.0-4.0	.32	.32	5	4	86
	17-51	40-60	1.40-1.50	0.00-0.06	0.13-0.18	9.0-25.0	1.0-2.0	.32	.32			
	51-80	40-60	1.40-1.50	0.00-0.06	0.13-0.18	9.0-25.0	0.3-1.0	.32	.32			
BrA:												
Branyon--------------	0-5	40-60	1.15-1.45	0.00-0.06	0.12-0.18	9.0-25.0	2.0-4.0	.32	.32	5	4	86
	5-74	40-60	1.20-1.45	0.00-0.06	0.12-0.18	9.0-25.0	0.3-2.0	.32	.32			
	74-80	40-60	1.20-1.35	0.00-0.06	0.12-0.18	9.0-25.0	0.3-1.0	.32	.32			
BtB:												
Bryde----------------	0-8	5-15	1.40-1.60	0.6-2	0.10-0.15	0.0-2.9	0.5-1.0	.43	.43	4	3	86
	8-26	35-50	1.35-1.60	0.06-0.2	0.12-0.18	9.0-25.0	0.5-2.0	.32	.32			
	26-44	35-50	1.40-1.60	0.06-0.2	0.12-0.18	6.0-8.9	0.5-2.0	.32	.32			
	44-55	25-45	1.40-1.70	0.06-0.2	0.14-0.18	3.0-5.9	0.5-1.0	.32	.32			
	55-80	5-18	1.35-1.55	0.06-0.2	0.05-0.09	0.0-2.9	0.5-1.0	.43	.43			
BuA:												
Buchel---------------	0-17	40-60	1.25-1.55	0.00-0.06	0.12-0.20	9.0-25.0	2.0-5.0	.32	.32	5	4	86
	17-63	40-60	1.25-1.60	0.00-0.06	0.12-0.20	9.0-25.0	1.0-3.0	.32	.32			
	63-80	40-60	1.30-1.60	0.00-0.06	0.12-0.20	9.0-25.0	1.0-3.0	.32	.32			
BvA:												
Buchel---------------	0-12	40-60	1.25-1.55	0.00-0.06	0.12-0.20	9.0-25.0	2.0-5.0	.32	.32	5	4	86
	12-65	40-60	1.25-1.60	0.00-0.06	0.12-0.20	9.0-25.0	1.0-3.0	.32	.32			
	65-80	40-60	1.30-1.60	0.00-0.06	0.12-0.20	9.0-25.0	1.0-3.0	.32	.32			
BwB:												
Burlewash------------	0-5	5-15	1.30-1.45	0.6-2	0.11-0.15	0.0-2.9	0.5-2.0	.43	.43	3	3	86
	5-23	40-55	1.30-1.45	0.00-0.06	0.07-0.16	6.0-8.9	0.1-1.0	.28	.28			
	23-28	30-45	1.30-1.45	0.2-0.6	0.07-0.16	6.0-8.9	0.1-1.0	.32	.32			
	28-80	---	---	0.06-0.2	---	---	---	---	---			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
BwC2:												
Burlewash, eroded---	0-4	5-15	1.30-1.45	0.6-2	0.11-0.15	0.0-2.9	0.5-2.0	.43	.43	3	3	86
	4-25	40-55	1.30-1.45	0.00-0.06	0.07-0.16	6.0-8.9	0.1-1.0	.28	.28			
	25-29	30-45	1.30-1.45	0.2-0.6	0.07-0.16	6.0-8.9	0.1-1.0	.32	.32			
	29-80	---	---	0.06-0.2	---	---	---	---	---			
BwE:												
Burlewash-----------	0-3	10-18	1.30-1.45	0.6-2	0.09-0.12	0.0-2.9	0.5-2.0	.20	.28	3	5	56
	3-16	40-55	1.30-1.45	0.00-0.06	0.07-0.16	6.0-8.9	0.5-2.0	.28	.28			
	16-28	30-45	1.30-1.45	0.2-0.6	0.07-0.16	6.0-8.9	0.5-1.0	.28	.28			
	28-80	---	---	0.2-2	---	---	---	---	---			
CaB:												
Cadell--------------	0-5	7-15	1.15-1.30	0.6-2	0.11-0.15	0.0-2.9	1.0-2.0	.43	.43	5	3	86
	5-47	27-50	1.30-1.50	0.06-0.2	0.12-0.20	6.0-8.9	0.5-1.0	.32	.32			
	47-55	27-45	1.35-1.60	0.06-0.2	0.12-0.18	3.0-5.9	0.3-0.7	.32	.32			
	55-80	35-60	1.20-1.70	0.00-0.06	0.10-0.18	3.0-5.9	0.1-0.5	.32	.32			
CbB:												
Carbengle-----------	0-8	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	8-35	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.32	.32			
	35-80	---	---	0.06-2	---	---	---	---	---			
CbC:												
Carbengle-----------	0-13	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	13-38	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.32	.32			
	38-80	---	---	0.06-2	---	---	---	---	---			
CbC2:												
Carbengle, eroded---	0-8	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	8-24	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.32	.32			
	24-80	---	---	0.06-2	---	---	---	---	---			
CbE:												
Carbengle-----------	0-7	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	7-28	20-35	1.40-1.55	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.32	.32			
	28-80	---	---	0.06-2	---	---	---	---	---			
ChA:												
Chazos--------------	0-11	2-12	1.40-1.60	2-6	0.06-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	11-38	35-50	1.35-1.50	0.06-0.2	0.10-0.18	3.0-5.9	0.5-1.0	.32	.32			
	38-66	20-40	1.35-1.55	0.06-0.2	0.10-0.18	3.0-5.9	0.3-1.0	.32	.32			
	66-80	27-45	1.40-1.60	0.06-0.2	0.10-0.18	3.0-5.9	0.1-0.5	.32	.32			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (K_{sat})	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors: Kw	Erosion factors: Kf	Erosion factors: T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
ChB:												
Chazos----------------	0-19	2-12	1.40-1.60	2-6	0.06-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	19-44	35-50	1.35-1.50	0.06-0.2	0.10-0.18	3.0-5.9	0.5-1.0	.32	.32			
	44-50	20-40	1.35-1.55	0.06-0.2	0.10-0.18	3.0-5.9	0.3-1.0	.32	.32			
	50-80	27-45	1.40-1.60	0.06-0.2	0.10-0.18	3.0-5.9	0.1-0.5	.32	.32			
CnB:												
Conquista------------	0-10	40-55	1.40-1.60	0.00-0.06	0.14-0.20	6.0-8.9	1.0-3.0	.32	.32	2	4	86
	10-80	18-35	1.60-1.80	0.2-0.6	0.07-0.11	0.0-2.9	0.5-2.0	.24	.24			
CnG:												
Conquista------------	0-11	40-55	1.40-1.60	0.00-0.06	0.14-0.20	6.0-8.9	1.0-3.0	.32	.32	2	4	86
	11-80	18-35	1.60-1.80	0.2-0.6	0.07-0.11	0.0-2.9	0.5-2.0	.24	.24			
CoA:												
Cost------------------	0-3	4-15	1.35-1.50	2-6	0.01-0.03	0.0-2.9	1.0-2.0	.20	.20	2	2	134
	3-30	35-45	1.40-1.60	0.00-0.06	0.03-0.07	6.0-8.9	0.2-1.0	.28	.28			
	30-80	5-25	1.25-1.60	0.2-0.6	0.01-0.05	3.0-5.9	0.1-0.5	.20	.20			
CpB:												
Coy-------------------	0-7	27-45	1.35-1.55	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.32	.32	5	4	86
	7-44	35-60	1.40-1.60	0.00-0.06	0.14-0.18	6.0-8.9	0.5-2.0	.32	.32			
	44-80	40-55	1.40-1.60	0.00-0.06	0.10-0.18	6.0-8.9	0.5-1.0	.32	.32			
CrB:												
Crockett-------------	0-7	5-20	1.50-1.60	0.6-2	0.11-0.20	0.0-2.9	0.5-2.0	.43	.43	5	5	86
	7-35	40-55	1.35-1.60	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	35-47	35-55	1.40-1.65	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	47-59	20-50	1.50-1.70	0.00-0.06	0.11-0.15	3.0-5.9	0.1-0.5	.32	.32			
	59-80	30-60	1.50-1.70	0.00-0.06	0.11-0.15	6.0-8.9	0.1-0.5	.32	.32			
CrC2:												
Crockett, eroded-----	0-3	5-20	1.50-1.60	0.6-2	0.11-0.20	0.0-2.9	0.5-2.0	.43	.43	5	5	86
	3-14	40-55	1.35-1.60	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	14-36	35-55	1.40-1.65	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	36-58	20-50	1.50-1.70	0.00-0.06	0.11-0.15	3.0-5.9	0.1-0.5	.32	.32			
	58-80	30-60	1.50-1.70	0.00-0.06	0.11-0.15	6.0-8.9	0.1-0.5	.32	.32			
CsB:												
Crockett-------------	0-6	5-20	1.50-1.60	0.6-2	0.09-0.15	0.0-2.9	0.5-2.0	.28	.32	5	8	0
	6-23	40-55	1.35-1.60	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	23-45	35-55	1.40-1.65	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	45-56	20-50	1.50-1.70	0.00-0.06	0.11-0.15	3.0-5.9	0.1-0.5	.32	.32			
	56-80	30-60	1.50-1.70	0.00-0.06	0.11-0.15	6.0-8.9	0.1-0.5	.32	.32			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
CsC2:												
Crockett, eroded----	0-3	5-20	1.50-1.60	0.6-2	0.09-0.15	0.0-2.9	0.5-2.0	.28	.32	5	8	0
	3-22	40-55	1.35-1.60	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	22-43	35-55	1.40-1.65	0.00-0.06	0.08-0.14	6.0-8.9	0.2-0.5	.32	.32			
	43-57	20-50	1.50-1.70	0.00-0.06	0.11-0.15	3.0-5.9	0.1-0.5	.32	.32			
	57-80	30-60	1.50-1.70	0.00-0.06	0.11-0.15	6.0-8.9	0.1-0.5	.32	.32			
CuB:												
Cuero----------------	0-12	10-20	1.45-1.70	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	12-39	20-35	1.45-1.70	0.6-2	0.15-0.22	3.0-5.9	0.1-1.0	.28	.28			
	39-64	20-35	1.45-1.70	0.6-2	0.15-0.19	3.0-5.9	0.1-1.0	.32	.32			
	64-80	---	---	0.2-20	---	---	---	---	---			
DeA:												
Degola---------------	0-18	18-35	1.30-1.50	0.6-2	0.12-0.18	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	18-80	18-35	1.40-1.55	0.6-2	0.12-0.18	0.0-2.9	0.5-2.0	.32	.32			
DfA:												
Degola---------------	0-25	18-35	1.30-1.50	0.6-2	0.12-0.18	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	25-80	18-35	1.40-1.55	0.6-2	0.12-0.18	0.0-2.9	0.5-2.0	.32	.32			
DmB:												
Dimebox--------------	0-17	40-60	1.25-1.40	0.00-0.06	0.12-0.18	9.0-25.0	1.0-5.0	.32	.32	5	4	86
	17-64	40-60	1.25-1.40	0.00-0.06	0.12-0.18	9.0-25.0	1.0-5.0	.32	.32			
	64-80	40-60	1.25-1.40	0.00-0.06	0.12-0.18	9.0-25.0	0.5-2.0	.32	.32			
DyC2:												
Dreyer, eroded------	0-3	40-60	1.25-1.45	0.00-0.06	0.15-0.18	9.0-25.0	1.0-2.0	.32	.32	5	4	86
	3-43	40-60	1.25-1.45	0.00-0.06	0.15-0.18	9.0-25.0	0.3-1.0	.32	.32			
	43-80	40-60	1.30-1.50	0.00-0.06	0.12-0.16	9.0-25.0	0.1-0.5	.32	.32			
DyE:												
Dreyer---------------	0-7	40-60	1.25-1.45	0.00-0.06	0.15-0.18	9.0-25.0	1.0-2.0	.32	.32	5	4	86
	7-42	40-60	1.25-1.45	0.00-0.06	0.15-0.18	9.0-25.0	0.3-1.0	.32	.32			
	42-80	40-60	1.30-1.50	0.00-0.06	0.12-0.16	9.0-25.0	0.1-0.5	.32	.32			
EcB:												
Ecleto---------------	0-4	15-30	1.40-1.55	0.2-0.6	0.10-0.20	3.0-5.9	1.0-3.0	.37	.37	2	5	56
	4-18	35-45	1.35-1.55	0.06-0.2	0.14-0.20	6.0-8.9	1.0-3.0	.32	.32			
	18-80	---	---	0.2-2	---	---	---	---	---			
EcC:												
Ecleto---------------	0-6	15-30	1.40-1.55	0.2-0.6	0.10-0.20	3.0-5.9	1.0-3.0	.37	.37	2	5	56
	6-19	35-45	1.35-1.55	0.06-0.2	0.14-0.20	6.0-8.9	1.0-3.0	.32	.32			
	19-80	---	---	0.2-2	---	---	---	---	---			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
EdB:												
Edge-----------------	0-11	5-12	1.25-1.55	0.6-2	0.14-0.18	0.0-2.9	0.5-1.0	.43	.43	5	3	86
	11-43	40-55	1.36-1.55	0.00-0.06	0.11-0.19	6.0-8.9	0.5-1.0	.32	.32			
	43-52	35-45	1.45-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.5-1.0	.32	.32			
	52-59	10-40	1.40-1.69	0.2-0.6	0.10-0.16	3.0-5.9	0.3-0.7	.37	.37			
	59-80	10-45	1.50-1.75	0.06-0.2	0.11-0.18	3.0-5.9	0.1-0.5	.37	.37			
EdC2:												
Edge, eroded--------	0-6	5-12	1.25-1.55	0.6-2	0.14-0.18	0.0-2.9	0.5-1.0	.43	.43	5	3	86
	6-12	40-55	1.36-1.55	0.00-0.06	0.11-0.19	6.0-8.9	0.5-1.0	.32	.32			
	12-32	35-45	1.45-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.5-1.0	.32	.32			
	32-40	10-40	1.40-1.69	0.2-0.6	0.10-0.16	3.0-5.9	0.3-0.7	.37	.37			
	40-80	10-45	1.50-1.75	0.06-0.2	0.11-0.18	3.0-5.9	0.1-0.5	.37	.37			
EdD3:												
Edge, severely eroded-------------	0-3	5-12	1.25-1.55	0.6-2	0.14-0.18	0.0-2.9	0.5-1.0	.43	.43	5	3	86
	3-45	40-55	1.36-1.55	0.00-0.06	0.11-0.19	6.0-8.9	0.5-1.0	.32	.32			
	45-50	35-45	1.45-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.5-1.0	.32	.32			
	50-53	10-40	1.40-1.69	0.2-0.6	0.10-0.16	3.0-5.9	0.3-0.7	.37	.37			
	53-80	10-45	1.50-1.75	0.06-0.2	0.11-0.18	3.0-5.9	0.1-0.5	.37	.37			
EdE2:												
Edge-----------------	0-4	5-12	1.25-1.55	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.20	.28	5	8	86
	4-15	40-55	1.36-1.55	0.00-0.06	0.11-0.19	6.0-8.9	0.5-1.0	.32	.32			
	15-40	27-45	1.45-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.5-1.0	.32	.32			
	40-56	10-40	1.40-1.69	0.2-0.6	0.10-0.16	3.0-5.9	0.3-0.7	.37	.37			
	56-80	10-45	1.50-1.75	0.06-0.2	0.11-0.18	3.0-5.9	0.1-0.5	.37	.37			
EgC:												
Edge-----------------	0-3	5-12	1.25-1.55	0.6-2	0.14-0.18	0.0-2.9	0.5-1.0	.20	.28	5	3	0
	3-28	40-55	1.36-1.55	0.00-0.06	0.11-0.19	6.0-8.9	0.5-1.0	.32	.32			
	28-33	35-45	1.45-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.5-1.0	.32	.32			
	33-50	10-40	1.40-1.69	0.2-0.6	0.10-0.16	3.0-5.9	0.3-0.7	.37	.37			
	50-80	10-45	1.50-1.75	0.06-0.2	0.11-0.18	3.0-5.9	0.1-0.5	.37	.37			
EgE:												
Edge-----------------	0-5	5-12	1.25-1.55	0.6-2	0.10-0.14	0.0-2.9	0.5-1.0	.20	.28	5	8	0
	5-16	40-55	1.36-1.55	0.00-0.06	0.11-0.19	6.0-8.9	0.5-1.0	.32	.32			
	16-32	27-45	1.45-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.5-1.0	.32	.32			
	32-48	10-40	1.40-1.69	0.2-0.6	0.10-0.16	3.0-5.9	0.3-0.7	.37	.37			
	48-80	10-45	1.50-1.75	0.06-0.2	0.11-0.18	3.0-5.9	0.1-0.5	.37	.37			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (K_{sat})	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
EkB:												
Elmendorf-----------	0-27	20-34	1.35-1.55	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	27-63	35-50	1.30-1.60	0.00-0.06	0.15-0.20	6.0-8.9	1.0-3.0	.32	.32			
	63-80	30-45	1.25-1.60	0.00-0.06	0.04-0.18	6.0-8.9	0.5-1.0	.32	.32			
Denhawken-----------	0-6	30-45	1.20-1.50	0.2-0.6	0.13-0.18	3.0-5.9	1.0-4.0	.32	.32	5	6	48
	6-18	30-50	1.25-1.50	0.00-0.06	0.14-0.18	6.0-8.9	1.0-2.0	.32	.32			
	18-45	35-55	1.25-1.60	0.00-0.06	0.14-0.18	6.0-8.9	0.5-1.0	.32	.32			
	45-70	35-50	1.35-1.60	0.00-0.06	0.04-0.15	6.0-8.9	0.1-0.5	.32	.32			
	70-80	35-50	1.45-1.65	0.00-0.06	0.03-0.12	6.0-8.9	0.1-0.3	.32	.32			
EkC:												
Elmendorf-----------	0-11	20-34	1.35-1.55	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	11-36	35-50	1.30-1.60	0.00-0.06	0.15-0.20	6.0-8.9	1.0-3.0	.32	.32			
	36-80	30-45	1.25-1.60	0.00-0.06	0.04-0.18	6.0-8.9	0.5-1.0	.32	.32			
Denhawken-----------	0-5	30-45	1.20-1.50	0.2-0.6	0.13-0.18	3.0-5.9	1.0-4.0	.32	.32	5	6	48
	5-21	30-50	1.25-1.50	0.00-0.06	0.14-0.18	6.0-8.9	1.0-2.0	.32	.32			
	21-42	35-55	1.25-1.60	0.00-0.06	0.14-0.18	6.0-8.9	0.5-1.0	.32	.32			
	42-60	35-50	1.35-1.60	0.00-0.06	0.04-0.15	6.0-8.9	0.1-0.5	.32	.32			
	60-80	35-50	1.45-1.65	0.00-0.06	0.03-0.12	6.0-8.9	0.1-0.3	.32	.32			
EsB:												
Eloso---------------	0-9	40-50	1.15-1.50	0.00-0.06	0.14-0.20	6.0-8.9	1.0-3.0	.28	.28	3	4	86
	9-24	40-55	1.20-1.50	0.00-0.06	0.14-0.20	6.0-8.9	0.5-2.0	.28	.28			
	24-37	35-50	1.20-1.50	0.06-0.2	0.08-0.18	6.0-8.9	0.5-1.0	.28	.28			
	37-80	15-27	1.20-1.35	0.6-2	0.08-0.18	0.0-2.9	0.1-0.5	.32	.32			
FnB:												
Flatonia------------	0-12	14-35	1.40-1.65	0.2-0.6	0.12-0.19	3.0-5.9	1.0-4.0	.32	.32	4	6	48
	12-49	40-50	1.35-1.60	0.06-0.2	0.12-0.18	6.0-8.9	0.5-2.0	.32	.32			
	49-54	25-40	1.40-1.70	0.06-0.2	0.12-0.18	3.0-5.9	0.5-1.0	.37	.37			
	54-80	---	---	0.06-0.6	---	---	---	---	---			
FsB:												
Frelsburg-----------	0-9	45-60	1.25-1.45	0.00-0.06	0.15-0.20	9.0-25.0	1.0-4.0	.32	.32	5	4	86
	9-72	45-60	1.30-1.50	0.00-0.06	0.14-0.19	9.0-25.0	0.5-2.0	.32	.32			
	72-80	45-60	1.30-1.50	0.00-0.06	0.14-0.19	9.0-25.0	0.5-1.0	.32	.32			
FsC:												
Frelsburg-----------	0-10	45-60	1.25-1.45	0.00-0.06	0.15-0.20	9.0-25.0	1.0-4.0	.32	.32	5	4	86
	10-72	45-60	1.30-1.50	0.00-0.06	0.14-0.19	9.0-25.0	0.5-2.0	.32	.32			
	72-80	45-60	1.30-1.50	0.00-0.06	0.14-0.19	9.0-25.0	0.5-1.0	.32	.32			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
GfA:												
Ganado	0-13	40-60	1.20-1.45	0.00-0.06	0.13-0.17	6.0-8.9	2.0-5.0	.32	.32	5	4	86
	13-68	40-60	1.20-1.45	0.00-0.06	0.13-0.17	9.0-25.0	2.0-3.0	.32	.32			
	68-80	30-50	1.30-1.50	0.06-0.2	0.13-0.16	3.0-5.9	0.3-1.0	.32	.32			
GhC:												
Gholson	0-12	3-12	1.55-1.65	2-6	0.07-0.11	0.0-2.9	0.5-1.0	.28	.28	5	2	134
	12-62	20-35	1.55-1.65	0.6-2	0.15-0.19	0.0-2.9	0.3-1.0	.32	.32			
	62-80	18-39	1.55-1.70	0.6-2	0.12-0.16	0.0-2.9	0.1-0.5	.32	.32			
GkC:												
Gillett	0-5	8-19	1.70-1.80	0.6-2	0.08-0.12	0.0-2.9	0.5-1.0	.32	.32	3	3	86
	5-27	35-55	1.35-1.55	0.06-0.2	0.11-0.15	6.0-8.9	0.3-0.5	.37	.37			
	27-34	25-50	1.40-1.60	0.06-0.2	0.05-0.10	3.0-5.9	0.1-0.5	.24	.37			
	34-80	5-18	1.35-1.55	0.06-0.2	0.01-0.04	0.0-2.9	0.1-0.5	.43	.43			
GkF:												
Gillett	0-4	8-20	1.50-1.70	0.6-2	0.10-0.14	0.0-2.9	0.1-1.0	.15	.37	3	8	0
	4-23	35-55	1.35-1.55	0.00-0.06	0.14-0.20	6.0-8.9	0.1-1.0	.43	.43			
	23-34	25-50	1.40-1.60	0.00-0.06	0.14-0.20	6.0-8.9	0.1-0.5	.15	.43			
	34-80	5-18	1.35-1.55	0.06-0.2	0.05-0.09	0.0-2.9	0.1-0.5	.43	.43			
GP:												
Pits	0-80	---	---	0.06-20	0.01-0.10	0.0-2.9	---	.10	---	1	8	0
GrB:												
Greenvine	0-8	40-60	1.10-1.30	0.00-0.06	0.12-0.18	9.0-25.0	1.0-4.0	.32	.32	3	4	86
	8-28	40-60	1.20-1.40	0.00-0.06	0.12-0.18	9.0-25.0	1.0-2.0	.32	.32			
	28-38	40-60	1.20-1.40	0.00-0.06	0.12-0.18	9.0-25.0	0.1-0.7	.32	.32			
	38-80	---	---	0.06-0.6	---	---	---	---	---			
GrC:												
Greenvine	0-11	40-60	1.10-1.30	0.00-0.06	0.12-0.18	9.0-25.0	1.0-4.0	.32	.32	3	4	86
	11-20	40-60	1.20-1.40	0.00-0.06	0.12-0.18	9.0-25.0	1.0-2.0	.32	.32			
	20-38	40-60	1.20-1.40	0.00-0.06	0.12-0.18	9.0-25.0	0.1-0.7	.32	.32			
	38-80	---	---	0.06-0.6	---	---	---	---	---			
GtB:												
Griter	0-7	10-20	1.50-1.70	0.6-2	0.09-0.13	0.0-2.9	0.3-1.0	.32	.32	5	3	86
	7-37	35-50	1.35-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.2-1.0	.32	.32			
	37-80	30-45	1.35-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.1-0.5	.32	.32			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
GtC2:												
Griter, eroded------	0-2	10-20	1.50-1.70	0.6-2	0.09-0.13	0.0-2.9	0.3-1.0	.32	.32	5	3	86
	2-51	35-50	1.35-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.2-1.0	.32	.32			
	51-80	30-45	1.35-1.65	0.06-0.2	0.10-0.16	3.0-5.9	0.1-0.5	.32	.32			
GU:												
Gullied land--------	0-80	---	---	0.06-20	---	---	---	---	---	-	---	---
ImA:												
Imogene-------------	0-4	10-18	1.40-1.70	0.6-2	0.10-0.20	0.0-2.9	1.0-3.0	.43	.43	2	3	86
	4-38	20-40	1.50-1.75	0.00-0.06	0.05-0.12	3.0-5.9	0.5-2.0	.43	.43			
	38-68	20-34	1.40-1.65	0.06-0.2	0.05-0.11	3.0-5.9	0.5-1.0	.43	.43			
	68-80	15-34	1.40-1.65	0.06-0.2	0.04-0.10	3.0-5.9	0.5-1.0	.43	.43			
JsC:												
Jedd----------------	0-12	10-18	1.20-1.40	0.6-2	0.08-0.14	0.0-2.9	0.5-2.0	.20	.24	3	8	0
	12-37	30-55	1.35-1.55	0.2-0.6	0.13-0.17	3.0-5.9	0.1-1.0	.32	.32			
	37-80	---	---	0.06-0.6	---	---	---	---	---			
JsE:												
Jedd----------------	0-12	10-18	1.20-1.40	0.6-2	0.08-0.14	0.0-2.9	0.5-2.0	.20	.24	3	8	0
	12-30	30-55	1.35-1.55	0.2-0.6	0.13-0.17	3.0-5.9	0.1-1.0	.32	.32			
	30-80	---	---	0.06-0.6	---	---	---	---	---			
KuB:												
Kurten--------------	0-5	7-18	1.45-1.60	0.6-2	0.11-0.15	0.0-2.9	0.5-1.0	.43	.43	5	3	86
	5-35	40-60	1.25-1.45	0.00-0.06	0.07-0.16	6.0-8.9	0.5-1.0	.37	.37			
	35-50	40-65	1.25-1.45	0.00-0.06	0.07-0.16	6.0-8.9	0.1-0.5	.37	.37			
	50-80	30-55	1.35-1.60	0.00-0.06	0.07-0.12	6.0-8.9	0.1-0.5	.37	.37			
LeB:												
Leming--------------	0-15	4-15	1.40-1.50	2-6	0.05-0.10	0.0-2.9	0.4-1.0	.20	.20	5	2	134
	15-29	3-15	1.40-1.55	2-6	0.03-0.10	0.0-2.9	0.1-1.0	.17	.17			
	29-49	35-50	1.35-1.50	0.06-0.2	0.15-0.20	3.0-5.9	0.1-0.5	.32	.32			
	49-66	27-45	1.40-1.60	0.6-2	0.14-0.18	3.0-5.9	0.1-0.5	.32	.32			
	66-80	10-25	1.40-1.65	0.6-2	0.11-0.15	0.0-2.9	0.1-0.5	.37	.37			
LkA:												
Luckenbach----------	0-16	20-35	1.45-1.65	0.6-2	0.11-0.17	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	16-56	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	56-80	30-50	1.40-1.60	0.2-0.6	0.10-0.15	3.0-5.9	0.1-1.0	.28	.32			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
LkB:												
Luckenbach----------	0-12	20-35	1.45-1.65	0.6-2	0.11-0.17	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	12-26	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	26-80	30-50	1.40-1.60	0.2-0.6	0.10-0.15	3.0-5.9	0.1-1.0	.28	.32			
LuB:												
Luling--------------	0-14	40-55	1.20-1.35	0.00-0.06	0.12-0.18	9.0-25.0	1.0-3.0	.32	.32	4	4	86
	14-42	40-55	1.25-1.40	0.00-0.06	0.12-0.18	9.0-25.0	0.5-2.0	.32	.32			
	42-63	40-55	1.25-1.45	0.00-0.06	0.12-0.18	9.0-25.0	0.1-1.0	.32	.32			
	63-80	40-55	1.65-1.85	0.00-0.06	0.07-0.12	9.0-25.0	0.1-1.0	.32	.32			
LuC:												
Luling--------------	0-9	40-55	1.20-1.35	0.00-0.06	0.12-0.18	9.0-25.0	1.0-3.0	.32	.32	4	4	86
	9-51	40-55	1.25-1.40	0.00-0.06	0.12-0.18	9.0-25.0	0.5-2.0	.32	.32			
	51-55	40-55	1.25-1.45	0.00-0.06	0.12-0.18	9.0-25.0	0.1-1.0	.32	.32			
	55-80	40-55	1.65-1.85	0.00-0.06	0.07-0.12	9.0-25.0	0.1-1.0	.32	.32			
LuC2:												
Luling, eroded------	0-3	40-55	1.20-1.35	0.00-0.06	0.12-0.18	9.0-25.0	1.0-3.0	.32	.32	4	4	86
	3-51	40-55	1.25-1.40	0.00-0.06	0.12-0.18	9.0-25.0	0.5-2.0	.32	.32			
	51-60	40-55	1.25-1.45	0.00-0.06	0.12-0.18	9.0-25.0	0.1-1.0	.32	.32			
	60-80	40-55	1.65-1.85	0.00-0.06	0.07-0.12	9.0-25.0	0.1-1.0	.32	.32			
MaA:												
Mabank--------------	0-7	10-25	1.50-1.65	0.6-2	0.11-0.15	0.0-2.9	1.0-2.0	.43	.43	5	3	86
	7-57	35-50	1.45-1.65	0.00-0.06	0.12-0.18	6.0-8.9	1.0-2.0	.32	.32			
	57-80	35-50	1.45-1.65	0.00-0.06	0.12-0.18	6.0-8.9	0.1-0.5	.32	.32			
MeA:												
Meguin--------------	0-16	27-35	1.30-1.60	0.6-2	0.15-0.22	3.0-5.9	1.0-3.0	.43	.43	5	4L	86
	16-80	25-35	1.30-1.60	0.6-2	0.15-0.22	3.0-5.9	0.5-2.0	.43	.43			
MfA:												
Meguin--------------	0-13	27-35	1.30-1.60	0.6-2	0.15-0.22	3.0-5.9	1.0-3.0	.43	.43	5	4L	86
	13-80	25-35	1.30-1.60	0.6-2	0.15-0.22	3.0-5.9	0.5-2.0	.43	.43			
MoB:												
Monteola------------	0-14	40-55	1.20-1.45	0.00-0.06	0.13-0.18	9.0-25.0	1.0-4.0	.32	.32	5	4	86
	14-41	40-60	1.20-1.55	0.00-0.06	0.13-0.18	9.0-25.0	0.5-3.0	.37	.37			
	41-70	40-60	1.30-1.60	0.00-0.06	0.13-0.17	9.0-25.0	0.5-1.0	.37	.37			
	70-80	40-60	1.40-1.65	0.00-0.06	0.06-0.13	6.0-8.9	0.5-1.0	.37	.37			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
MoC:												
Monteola------------	0-7	40-55	1.20-1.45	0.00-0.06	0.13-0.18	9.0-25.0	1.0-4.0	.32	.32	5	4	86
	7-51	40-60	1.20-1.55	0.00-0.06	0.13-0.18	9.0-25.0	0.5-3.0	.37	.37			
	51-70	40-60	1.30-1.60	0.00-0.06	0.13-0.17	9.0-25.0	0.5-1.0	.37	.37			
	70-80	40-60	1.40-1.65	0.00-0.06	0.06-0.13	6.0-8.9	0.5-1.0	.37	.37			
NaA:												
Navasota------------	0-7	35-55	1.20-1.40	0.06-0.2	0.15-0.20	9.0-25.0	1.0-3.0	.32	.32	5	4	86
	7-25	40-55	1.20-1.40	0.00-0.06	0.15-0.18	9.0-25.0	0.5-2.0	.32	.32			
	25-80	35-55	1.30-1.50	0.00-0.06	0.15-0.18	9.0-25.0	0.3-0.5	.32	.32			
NmB:												
Normangee-----------	0-6	25-35	1.50-1.60	0.06-0.2	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37	4	6	48
	6-53	35-55	1.55-1.65	0.00-0.06	0.12-0.18	6.0-8.9	0.0-0.5	.32	.32			
	53-80	35-55	1.60-1.70	0.00-0.06	0.12-0.18	6.0-8.9	0.0-0.5	.32	.32			
NmC:												
Normangee-----------	0-6	25-35	1.50-1.60	0.06-0.2	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37	4	6	48
	5-53	35-55	1.55-1.65	0.00-0.06	0.12-0.18	6.0-8.9	0.0-0.5	.32	.32			
	53-80	35-55	1.60-1.70	0.00-0.06	0.12-0.18	6.0-8.9	0.0-0.5	.32	.32			
NuC:												
Nusil---------------	0-24	1-10	1.35-1.50	6-20	0.05-0.08	0.0-2.9	0.5-1.0	.17	.17	5	1	250
	24-35	1-13	1.35-1.65	2-20	0.05-0.11	0.0-2.9	0.1-1.0	.17	.17			
	35-49	18-35	1.65-1.75	0.06-0.2	0.12-0.17	3.0-5.9	0.1-1.0	.24	.24			
	49-57	18-35	1.60-1.70	0.2-0.6	0.08-0.12	3.0-5.9	0.1-1.0	.24	.24			
	57-80	15-30	1.50-1.65	0.6-2	0.11-0.17	3.0-5.9	0.5-1.0	.24	.24			
PaC:												
Padina--------------	0-15	2-10	1.20-1.50	6-20	0.07-0.11	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	15-49	2-10	1.20-1.50	6-20	0.05-0.08	0.0-2.9	0.1-0.5	.17	.17			
	49-80	18-30	1.40-1.60	0.6-2	0.14-0.18	0.0-2.9	0.1-0.5	.24	.24			
PbA:												
Papalote------------	0-14	4-15	1.50-1.70	2-6	0.07-0.11	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	14-39	35-55	1.35-1.60	0.06-0.2	0.13-0.18	3.0-5.9	0.2-0.8	.32	.32			
	39-80	30-40	1.45-1.70	0.06-0.2	0.12-0.17	3.0-5.9	0.1-0.5	.32	.32			
PbB:												
Papalote------------	0-7	6-17	1.45-1.70	2-6	0.11-0.16	0.0-2.9	0.5-1.0	.32	.32	5	3	86
	7-49	35-55	1.35-1.60	0.06-0.2	0.13-0.18	3.0-5.9	0.2-0.8	.32	.32			
	49-80	30-40	1.45-1.70	0.06-0.2	0.12-0.17	3.0-5.9	0.1-0.5	.32	.32			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
PkB:												
Pavelek--------------	0-11	35-50	1.10-1.47	0.06-0.2	0.14-0.20	6.0-8.9	1.0-3.0	.37	.37	2	4	86
	11-17	35-55	1.10-1.47	0.06-0.2	0.12-0.18	3.0-5.9	1.0-3.0	.15	.37			
	17-25	0-0	---	0.06-0.2	0.00-0.00	---	---	---	---			
	25-80	14-26	1.20-1.35	0.6-2	0.02-0.05	0.0-2.9	0.0-0.5	.37	.37			
RhC:												
Rhymes---------------	0-25	1-10	1.35-1.50	6-20	0.05-0.08	0.0-2.9	0.5-1.0	.17	.17	5	1	250
	25-48	1-13	1.35-1.50	2-20	0.05-0.11	0.0-2.9	0.1-1.0	.17	.17			
	48-80	18-35	1.50-1.65	0.2-0.6	0.12-0.17	3.0-5.9	0.1-1.0	.24	.24			
RoB:												
Rosanky--------------	0-12	5-18	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	12-27	35-50	1.40-1.60	0.2-0.6	0.11-0.17	3.0-5.9	0.1-0.5	.32	.32			
	27-70	15-35	1.40-1.65	0.2-0.6	0.10-0.16	0.0-2.9	0.1-0.5	.37	.37			
	70-80	---	---	0.2-2	---	---	---	---	---			
RoC2:												
Rosanky, eroded-----	0-3	5-18	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	3-46	35-50	1.40-1.60	0.2-0.6	0.11-0.17	3.0-5.9	0.1-0.5	.32	.32			
	46-60	15-35	1.40-1.65	0.2-0.6	0.10-0.16	0.0-2.9	0.1-0.5	.37	.37			
	60-80	---	---	0.2-2	---	---	---	---	---			
RsB:												
Rosenbrock-----------	0-8	40-50	1.10-1.35	0.00-0.06	0.14-0.20	6.0-8.9	2.0-5.0	.24	.24	4	4	86
	8-59	45-60	1.10-1.35	0.00-0.06	0.14-0.20	6.0-8.9	1.0-3.0	.24	.24			
	59-80	10-26	1.10-1.35	0.6-2	0.07-0.11	0.0-2.9	0.1-0.3	.37	.37			
RvA:												
Rutersville----------	0-12	2-10	1.50-1.70	6-20	0.07-0.12	0.0-2.9	0.5-1.0	.24	.24	3	2	134
	12-30	27-45	1.50-1.70	0.06-0.2	0.14-0.18	6.0-8.9	0.5-1.0	.32	.32			
	30-46	20-35	1.55-1.70	0.06-0.2	0.11-0.17	3.0-5.9	0.5-1.0	.32	.32			
	46-58	15-25	1.55-1.70	0.06-0.2	0.11-0.17	3.0-5.9	0.1-0.5	.32	.32			
	58-80	---	---	0.06-0.2	---	---	---	---	---			
SaD:												
Sarnosa--------------	0-10	8-25	1.35-1.55	0.6-2	0.10-0.15	0.0-2.9	1.0-3.0	.24	.24	5	4	86
	10-63	8-25	1.40-1.60	0.6-2	0.10-0.15	0.0-2.9	0.5-2.0	.24	.24			
	63-80	8-25	1.40-1.65	2-6	0.06-0.12	0.0-2.9	0.1-1.0	.24	.24			
ScC:												
Schattel-------------	0-6	27-45	1.15-1.35	0.6-2	0.11-0.18	3.0-5.9	0.5-2.0	.32	.32	3	6	48
	6-52	35-55	1.20-1.45	0.2-0.6	0.08-0.15	6.0-8.9	0.5-1.0	.32	.32			
	52-80	35-60	1.65-1.80	0.06-0.2	0.03-0.08	6.0-8.9	0.1-0.5	.37	.37			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
ShC:												
Shalba	0-5	5-15	1.40-1.60	0.6-2	0.11-0.15	0.0-2.9	0.3-1.0	.43	.43	2	3	86
	5-18	40-60	1.40-1.60	0.00-0.06	0.08-0.14	6.0-8.9	0.1-1.0	.32	.32			
	18-80	---	---	0.06-0.6	---	---	---	---	---			
SnC:												
Shiner	0-8	10-20	1.40-1.60	0.6-2	0.10-0.15	0.0-2.9	0.5-2.0	.24	.28	2	3	86
	8-16	10-20	1.40-1.60	0.6-2	0.06-0.12	0.0-2.9	0.5-2.0	.24	.28			
	16-25	0-30	1.80-1.90	0.6-2	0.03-0.10	0.0-2.9	0.5-1.0	---	---			
	25-80	10-20	1.40-1.65	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.24	.24			
SnE:												
Shiner	0-8	10-20	1.40-1.60	0.6-2	0.10-0.15	0.0-2.9	0.5-2.0	.24	.28	2	3	86
	8-16	10-20	1.40-1.60	0.6-2	0.06-0.12	0.0-2.9	0.5-2.0	.24	.28			
	16-35	0-30	1.80-1.90	0.6-2	0.03-0.10	0.0-2.9	0.5-1.0	---	---			
	35-80	10-20	1.40-1.65	0.6-2	0.05-0.10	0.0-2.9	0.5-1.0	.24	.24			
SoC:												
Shiro	0-8	5-12	1.35-1.55	2-6	0.08-0.11	0.0-2.9	0.5-1.0	.32	.32	3	2	134
	8-12	35-45	1.30-1.50	0.06-0.2	0.10-0.16	6.0-8.9	0.1-1.0	.32	.32			
	12-34	35-45	1.30-1.50	0.06-0.2	0.10-0.16	6.0-8.9	0.1-0.7	.32	.32			
	34-80	0-0	---	0.06-0.6	---	---	---	---	---			
SsC:												
Silstid	0-26	3-12	1.40-1.60	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	26-30	3-12	1.40-1.60	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.17			
	30-54	18-32	1.50-1.70	0.6-2	0.10-0.16	0.0-2.9	0.3-1.0	.24	.24			
	54-80	18-32	1.50-1.70	0.6-2	0.10-0.16	0.0-2.9	0.1-0.5	.24	.28			
SvD:												
Silvern	0-69	0-5	1.45-1.65	6-20	0.01-0.04	0.0-2.9	0.2-1.0	.10	.17	5	8	0
	69-80	18-35	1.40-1.60	0.6-2	0.05-0.10	0.0-2.9	0.1-0.4	.10	.28			
SwA:												
Singleton	0-12	5-20	1.40-1.70	0.6-2	0.11-0.18	0.0-2.9	0.5-1.0	.43	.43	3	3	86
	12-30	35-50	1.40-1.60	0.00-0.06	0.09-0.16	6.0-8.9	0.3-1.0	.32	.32			
	30-35	35-45	1.35-1.50	0.00-0.06	0.07-0.16	6.0-8.9	0.2-1.0	.32	.32			
	35-80	---	---	0.06-0.6	---	---	---	---	---			
SwC:												
Singleton	0-7	5-20	1.40-1.70	0.6-2	0.11-0.18	0.0-2.9	0.5-1.0	.43	.43	3	3	86
	7-21	35-50	1.40-1.60	0.00-0.06	0.09-0.16	6.0-8.9	0.3-1.0	.32	.32			
	21-33	35-45	1.35-1.50	0.00-0.06	0.07-0.16	6.0-8.9	0.2-1.0	.32	.32			
	33-37	25-40	1.20-1.50	0.06-0.2	0.07-0.16	3.0-5.9	0.1-0.7	.32	.32			
	37-80	---	---	0.06-0.6	---	---	---	---	---			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
SxB:												
Styx	0-12	3-15	1.40-1.60	2-6	0.05-0.10	0.0-2.9	0.5-2.0	.17	.17	5	2	134
	12-27	3-15	1.40-1.60	2-6	0.05-0.10	0.0-2.9	0.5-2.0	.17	.17			
	27-80	25-35	1.30-1.65	0.6-2	0.12-0.16	0.0-2.9	0.3-0.7	.24	.24			
SyC:												
Sunev	0-9	15-28	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	9-45	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	45-80	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
SyE:												
Sunev	0-15	15-28	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	15-34	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	34-80	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
TbA:												
Tabor	0-13	8-20	1.50-1.60	0.6-2	0.11-0.15	0.0-2.9	0.5-1.0	.28	.43	5	3	86
	13-46	40-55	1.35-1.55	0.00-0.06	0.09-0.12	6.0-8.9	0.1-1.0	.32	.32			
	46-80	25-45	1.45-1.65	0.00-0.06	0.14-0.18	6.0-8.9	0.1-0.5	.32	.32			
TbB:												
Tabor	0-6	8-20	1.50-1.60	0.6-2	0.11-0.15	0.0-2.9	0.5-1.0	.28	.43	5	3	86
	6-64	40-55	1.35-1.55	0.00-0.06	0.09-0.12	6.0-8.9	0.1-1.0	.32	.32			
	64-80	25-45	1.45-1.65	0.00-0.06	0.14-0.18	6.0-8.9	0.1-0.5	.32	.32			
TnA:												
Tinn	0-7	40-60	1.40-1.50	0.06-0.2	0.15-0.20	9.0-25.0	1.0-4.0	.32	.32	5	4	86
	7-39	40-60	1.40-1.50	0.00-0.06	0.13-0.18	9.0-25.0	1.0-2.0	.32	.32			
	39-80	40-60	1.40-1.50	0.00-0.06	0.13-0.18	9.0-25.0	0.3-1.0	.32	.32			
ToA:												
Tinn	0-8	40-60	1.40-1.50	0.06-0.2	0.15-0.20	9.0-25.0	1.0-4.0	.32	.32	5	4	86
	8-29	40-60	1.40-1.50	0.00-0.06	0.13-0.18	9.0-25.0	1.0-2.0	.32	.32			
	29-80	40-60	1.40-1.50	0.00-0.06	0.13-0.18	9.0-25.0	0.3-1.0	.32	.32			
TrB:												
Tordia	0-14	40-60	1.25-1.45	0.00-0.06	0.12-0.18	6.0-8.9	1.0-4.0	.32	.32	4	4	86
	14-36	40-60	1.25-1.45	0.00-0.06	0.12-0.18	6.0-8.9	0.5-1.0	.32	.32			
	36-44	40-60	1.25-1.45	0.00-0.06	0.12-0.18	6.0-8.9	0.1-0.5	.32	.32			
	44-80	40-60	1.65-1.85	0.00-0.06	0.10-0.15	3.0-5.9	0.1-0.5	.32	.32			
TtC:												
Tremona	0-30	2-10	1.50-1.70	6-20	0.04-0.10	0.0-2.9	0.5-1.0	.24	.24	5	2	134
	30-56	35-50	1.40-1.65	0.00-0.06	0.12-0.18	6.0-8.9	0.3-0.7	.28	.32			
	56-80	25-45	1.40-1.65	0.00-0.06	0.12-0.18	6.0-8.9	0.1-0.5	.32	.37			

Table 26.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
W:												
Water----------------	---	---	---	---	---	---	---	---	---	-	---	---
WaA:												
Waelder--------------	0-14	15-25	1.30-1.55	2-6	0.14-0.17	0.0-2.9	1.0-4.0	.32	.32	5	5	56
	14-57	8-18	1.30-1.55	2-6	0.07-0.16	0.0-2.9	0.1-0.5	.28	.28			
	57-64	8-18	1.30-1.55	2-6	0.07-0.16	0.0-2.9	0.1-0.5	.28	.28			
	64-80	8-25	1.30-1.55	2-6	0.07-0.16	0.0-2.9	0.2-0.5	.28	.28			
WeA:												
Waelder--------------	0-16	15-25	1.30-1.55	2-6	0.14-0.17	0.0-2.9	1.0-4.0	.32	.32	5	5	56
	16-51	8-18	1.30-1.55	2-6	0.07-0.16	0.0-2.9	0.1-0.5	.28	.28			
	51-78	8-18	1.30-1.55	2-6	0.07-0.16	0.0-2.9	0.1-0.5	.28	.28			
	78-80	8-25	1.30-1.55	2-6	0.07-0.16	0.0-2.9	0.2-0.5	.28	.28			
WsC:												
Weesatche------------	0-11	14-20	1.35-1.55	0.6-2	0.11-0.15	0.0-2.9	1.0-4.0	.32	.32	5	3	86
	11-56	20-35	1.30-1.50	0.6-2	0.15-0.20	3.0-5.9	0.5-2.0	.32	.32			
	56-80	16-33	1.30-1.55	0.6-2	0.10-0.15	3.0-5.9	0.3-1.0	.32	.32			
WwA:												
Wilson---------------	0-5	27-35	1.35-1.50	0.2-0.6	0.10-0.17	3.0-5.9	0.5-2.0	.43	.43	5	6	48
	5-66	35-50	1.50-1.60	0.00-0.06	0.10-0.16	6.0-8.9	0.5-2.0	.37	.37			
	66-80	35-60	1.50-1.60	0.00-0.06	0.10-0.16	6.0-8.9	0.1-0.5	.37	.37			
ZkB:												
Zack-----------------	0-10	7-15	1.15-1.30	0.6-2	0.11-0.15	0.0-2.9	0.3-1.0	.43	.43	5	3	86
	10-20	40-60	1.30-1.45	0.00-0.06	0.09-0.14	6.0-8.9	0.2-1.0	.37	.37			
	20-30	35-55	1.30-1.50	0.00-0.06	0.09-0.14	6.0-8.9	0.1-0.7	.37	.37			
	30-38	20-35	1.35-1.60	0.06-0.2	0.09-0.14	3.0-5.9	0.1-0.5	.37	.37			
	38-80	15-35	1.35-1.60	0.06-0.2	0.07-0.12	0.0-2.9	0.1-0.5	.37	.37			
ZuB:												
Zulch----------------	0-6	4-12	1.50-1.70	0.6-2	0.11-0.15	0.0-2.9	0.5-2.0	.43	.43	5	3	86
	6-32	35-50	1.40-1.60	0.00-0.06	0.13-0.18	6.0-8.9	0.1-2.0	.32	.32			
	32-39	35-55	1.40-1.60	0.00-0.06	0.13-0.18	6.0-8.9	0.1-2.0	.32	.32			
	39-80	35-50	1.40-1.70	0.00-0.06	0.07-0.12	6.0-8.9	0.1-1.0	.37	.37			

Table 27.--Chemical Soil Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
AmB:								
Alum	0-30	3.0-10	---	6.1-6.5	0	0	0.0-2.0	0
	30-45	15-25	---	5.1-6.0	0	0	0.0-2.0	0
	45-62	15-25	---	5.1-6.0	0	0	0.0-2.0	0
	62-80	5.0-15	---	5.1-6.0	0	0	0.0-2.0	0
ApC:								
Arenosa	0-12	1.0-4.0	---	4.5-6.5	0	0	0.0-2.0	0
	12-80	---	1.0-3.0	4.5-6.0	0	0	0.0-2.0	0
ArA:								
Arol	0-5	5.0-15	---	5.1-6.5	0	0	0.0-2.0	0-2
	5-33	20-45	---	5.1-7.8	0-3	0-5	2.0-8.0	2-10
	33-80	---	---	---	---	---	---	---
ArB:								
Arol	0-6	5.0-15	---	5.1-6.5	0	0	0.0-2.0	0-2
	6-38	20-45	---	5.1-7.8	0-3	0-5	2.0-8.0	2-10
	38-80	---	---	---	---	---	---	---
AxB:								
Axtell	0-10	3.0-7.0	---	5.1-6.5	0	0	0.0-2.0	0
	10-41	10-30	---	4.5-6.5	0	0	0.0-2.0	0-2
	41-62	10-30	---	6.6-8.4	0-15	0-5	0.0-2.0	0-5
	62-80	10-30	---	5.6-8.4	0-10	0-5	0.0-2.0	0-5
AxC:								
Axtell	0-9	3.0-7.0	---	5.1-6.5	0	0	0.0-2.0	0
	9-45	10-30	---	4.5-6.5	0	0	0.0-2.0	0-2
	45-63	10-30	---	6.6-8.4	0-15	0-5	0.0-2.0	0-5
	63-80	10-30	---	5.6-8.4	0-10	0-5	0.0-2.0	0-5
AxE:								
Axtell	0-11	3.0-7.0	---	5.1-6.5	0	0	0.0-2.0	0
	11-43	10-30	---	4.5-6.5	0	0	0.0-2.0	0-2
	43-66	10-30	---	6.6-8.4	0-15	0-5	0.0-2.0	0-5
	66-80	10-30	---	5.6-8.4	0-10	0-5	0.0-2.0	0-5
BnB:								
Benchley	0-6	15-30	---	5.6-7.3	0	0	0.0-2.0	0
	6-49	25-40	---	5.6-7.3	0-2	0	0.0-2.0	0
	49-80	25-45	---	6.1-8.4	0-10	0-2	0.0-2.0	0
BoA:								
Bosque	0-28	15-30	---	7.9-8.4	2-15	0	0.0-2.0	0
	28-54	10-25	---	7.4-8.4	5-20	0	0.0-2.0	0
	54-80	15-35	---	7.9-8.4	7-20	0	0.0-2.0	0
BpA:								
Bosque	0-16	15-30	---	7.9-8.4	2-15	0	0.0-2.0	0
	16-68	10-25	---	7.4-8.4	5-20	0	0.0-2.0	0
	68-80	15-35	---	7.9-8.4	7-20	0	0.0-2.0	0
Tinn	0-17	30-45	---	7.4-8.4	2-10	0	0.0-2.0	0
	17-51	35-50	---	7.4-8.4	10-20	0	0.0-2.0	0-6
	51-80	35-50	---	7.4-8.4	10-25	0-2	0.0-2.0	0-6

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
BrA:								
Branyon	0-5	40-60	---	7.4-8.4	0-2	0	0.0-2.0	0
	5-74	40-60	---	7.4-8.4	2-15	0-5	0.0-4.0	0-2
	74-80	40-60	---	7.9-8.4	10-35	0-5	0.0-4.0	4-8
BtB:								
Bryde	0-8	5.0-10	---	6.1-7.3	0	0	0.0-2.0	0-4
	8-26	30-40	---	6.6-7.8	0	0	2.0-4.0	4-10
	26-44	30-40	---	7.4-8.4	0-2	0	2.0-4.0	4-10
	44-55	30-40	---	7.4-8.4	2-5	0-10	2.0-4.0	4-10
	55-80	20-30	---	7.4-8.4	0-10	0-5	2.0-4.0	4-12
BuA:								
Buchel	0-17	30-50	---	7.4-8.4	2-20	0	0.0-4.0	0-2
	17-63	30-50	---	7.4-8.4	2-20	0	0.0-4.0	0-10
	63-80	30-50	---	7.4-8.4	2-20	0	0.0-8.0	5-15
BvA:								
Buchel	0-12	30-50	---	7.9-8.4	2-20	0	0.0-4.0	0-2
	12-65	30-50	---	7.9-8.4	2-20	0	0.0-4.0	0-10
	65-80	30-50	---	7.9-8.4	2-20	0	0.0-8.0	5-15
BwB:								
Burlewash	0-5	---	5.0-15	4.5-6.0	0	0	0.0-2.0	0
	5-23	---	30-45	3.5-5.5	0	0	0.0-2.0	0
	23-28	---	30-40	4.5-5.5	0	0	0.0-2.0	0
	28-80	---	---	---	---	---	---	---
BwC2:								
Burlewash, eroded	0-4	---	5.0-15	4.5-6.0	0	0	0.0-2.0	0
	4-25	---	30-45	3.5-5.5	0	0	0.0-2.0	0
	25-29	---	30-40	4.5-5.5	0	0	0.0-2.0	0
	29-80	---	---	---	---	---	---	---
BwE:								
Burlewash	0-3	---	5.0-15	4.5-6.0	0	0	0	0
	3-16	---	30-45	3.6-5.5	0	0	0	0
	16-28	---	30-40	4.5-5.5	0	0	0	0
	28-80	---	---	---	---	---	---	---
CaB:								
Cadell	0-5	5.0-15	---	6.1-7.3	0-1	0	0.0-2.0	0-3
	5-47	25-35	---	6.1-7.8	1-8	3-15	0.0-4.0	3-6
	47-55	25-35	---	7.4-8.4	3-15	3-10	2.0-8.0	5-12
	55-80	25-45	---	7.4-8.4	3-10	3-10	2.0-8.0	5-12
CbB:								
Carbengle	0-8	10-20	---	7.9-8.4	10-20	0	0.0-2.0	0
	8-35	10-20	---	7.9-8.4	40-70	0-10	0.0-2.0	0
	35-80	---	---	---	---	---	---	---
CbC:								
Carbengle	0-13	10-20	---	7.9-8.4	10-20	0	0.0-2.0	0
	13-38	10-20	---	7.9-8.4	40-70	0-10	0.0-2.0	0
	38-80	---	---	---	---	---	---	---
CbC2:								
Carbengle, eroded	0-8	10-20	---	7.9-8.4	10-20	0	0.0-2.0	0
	8-24	10-20	---	7.9-8.4	40-70	0-10	0.0-2.0	0
	24-80	---	---	---	---	---	---	---

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
CbE:								
Carbengle	0-7	10-20	---	7.9-8.4	10-20	0	0.0-2.0	0
	7-28	10-20	---	7.9-8.4	40-70	0-10	0.0-2.0	0
	28-80	---	---	---	---	---	---	---
ChA:								
Chazos	0-11	2.0-7.0	---	5.6-7.3	0	0	0.0-2.0	0
	11-38	15-30	---	5.6-6.5	0	0	0.0-2.0	0-3
	38-66	15-30	---	7.4-8.4	0-5	0	0.0-2.0	0-5
	66-80	10-25	---	6.6-8.4	0-5	0	0.0-2.0	0-5
ChB:								
Chazos	0-19	2.0-7.0	---	5.6-7.3	0	0	0.0-2.0	0
	19-44	15-30	---	5.6-6.5	0	0	0.0-2.0	0-3
	44-50	15-30	---	7.4-8.4	0-5	0	0.0-2.0	0-5
	50-80	10-25	---	6.6-8.4	0-5	0	0.0-2.0	0-5
CnB:								
Conquista	0-10	35-45	---	7.4-8.4	0-10	0	0.0-2.0	0
	10-80	15-30	---	7.4-8.4	10-20	0	2.0-8.0	2-8
CnG:								
Conquista	0-11	35-45	---	7.4-8.4	0-10	0	0.0-2.0	0
	11-80	15-30	---	7.4-8.4	10-20	0	2.0-8.0	2-8
CoA:								
Cost	0-3	1.0-4.0	---	7.9-9.0	0	0	12.0-35.0	100-200
	3-30	10-20	---	7.9-9.0	0-1	0	16.0-32.0	100-200
	30-80	2.0-15	---	7.9-9.0	0-2	0	16.0-32.0	100-200
CpB:								
Coy	0-7	25-45	---	7.9-8.4	0	0	0.0-2.0	0-5
	7-44	25-45	---	7.9-8.4	0-10	0-5	0.0-2.0	2-5
	44-80	20-35	---	7.9-8.4	1-6	1-6	2.0-8.0	4-15
CrB:								
Crockett	0-7	10-20	---	5.6-7.3	0	0	0.0-2.0	0-5
	7-35	20-35	---	5.6-7.3	0-2	0	0.0-4.0	3-10
	35-47	20-35	---	6.1-7.8	0-2	0	0.0-4.0	3-10
	47-59	20-35	---	6.1-8.4	1-30	0-5	0.0-4.0	3-10
	59-80	15-35	---	6.1-8.4	0-15	0-5	0.0-4.0	3-10
CrC2:								
Crockett, eroded	0-3	10-20	---	5.6-7.3	0	0	0.0-2.0	0-5
	3-14	20-35	---	5.6-7.3	0-2	0	0.0-4.0	3-10
	14-36	20-35	---	6.1-7.8	0-2	0	0.0-4.0	3-10
	36-58	20-35	---	6.1-8.4	1-30	0-5	0.0-4.0	3-10
	58-80	15-35	---	6.1-8.4	0-15	0-5	0.0-4.0	3-10
CsB:								
Crockett	0-6	10-20	---	5.6-7.3	0	0	0.0-2.0	0-5
	6-23	20-35	---	5.6-7.3	0-2	0	0.0-4.0	3-10
	23-45	20-35	---	6.1-7.8	0-2	0	0.0-4.0	3-10
	45-56	20-35	---	6.1-8.4	1-30	0-5	0.0-4.0	3-10
	56-80	15-35	---	6.1-8.4	0-15	0-5	0.0-4.0	3-10

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
CsC2:								
Crockett, eroded-----	0-3	10-20	---	5.6-7.3	0	0	0.0-2.0	0-5
	3-22	20-35	---	5.6-7.3	0-2	0	0.0-4.0	3-10
	22-43	20-35	---	6.1-7.8	0-2	0	0.0-4.0	3-10
	43-57	20-35	---	6.1-8.4	1-30	0-5	0.0-4.0	3-10
	57-80	15-35	---	6.1-8.4	0-15	0-5	0.0-4.0	3-10
CuB:								
Cuero-----------------	0-12	5.0-15	---	6.1-7.8	0	0	0.0-2.0	0
	12-39	10-20	---	6.1-8.4	0-5	0	0.0-2.0	0
	39-64	10-20	---	7.9-8.4	15-35	0	0.0-2.0	0
	64-80	---	---	---	---	---	---	---
DeA:								
Degola----------------	0-18	15-25	---	6.1-7.8	0	0	0.0-2.0	0
	18-80	15-25	---	6.6-8.4	0-10	0	0.0-8.0	0-2
DfA:								
Degola----------------	0-25	15-25	---	6.1-7.8	0	0	0.0-2.0	0
	25-80	15-25	---	6.6-8.4	0-10	0	0.0-8.0	0-2
DmB:								
Dimebox---------------	0-17	30-50	---	5.6-7.3	0	0	0.0-2.0	0
	17-64	30-50	---	6.1-7.8	0-5	0-5	0.0-2.0	0-2
	64-80	20-40	---	6.1-8.4	0-15	0-5	0.0-2.0	0-4
DyC2:								
Dreyer, eroded--------	0-3	40-55	---	7.4-8.4	0-2	0	0.0-2.0	0
	3-43	35-50	---	7.4-8.4	0-25	0	0.0-2.0	0
	43-80	30-50	---	7.4-8.4	2-35	0	0.0-4.0	0
DyE:								
Dreyer----------------	0-7	40-55	---	7.4-8.4	0-2	0	0.0-2.0	0
	7-42	35-50	---	7.4-8.4	0-25	0	0.0-2.0	0
	42-80	30-50	---	7.4-8.4	2-35	0	0.0-4.0	0
EcB:								
Ecleto----------------	0-4	10-15	---	6.6-7.8	0	0	0.0-2.0	0-2
	4-18	30-35	---	6.6-7.8	0-5	0	0.0-2.0	0-4
	18-80	---	---	---	---	---	---	2-8
EcC:								
Ecleto----------------	0-6	10-15	---	6.6-7.8	0	0	0.0-2.0	0-2
	6-19	30-35	---	6.6-7.8	0-5	0	0.0-2.0	0-4
	19-80	---	---	---	---	---	---	2-8
EdB:								
Edge------------------	0-11	2.0-10	---	5.6-7.3	0	0	0.0-2.0	0-2
	11-43	10-30	---	4.5-7.3	0	0	0.0-2.0	0-4
	43-52	10-30	---	4.5-7.3	0-2	0	0.0-2.0	0-4
	52-59	5.0-30	---	4.5-7.3	0-2	0	0.0-2.0	0-8
	59-80	5.0-30	---	6.1-8.4	0-2	0	0.0-2.0	0-10
EdC2:								
Edge, eroded----------	0-6	2.0-10	---	5.6-7.3	0	0	0.0-2.0	0-2
	6-12	10-30	---	4.5-7.3	0	0	0.0-2.0	0-4
	12-32	10-30	---	4.5-7.3	0-2	0	0.0-2.0	0-4
	32-40	5.0-30	---	4.5-7.3	0-2	0	0.0-2.0	0-8
	40-80	5.0-30	---	6.1-8.4	0-2	0	0.0-2.0	0-10

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
EdD3:								
Edge, severely eroded	0-3	2.0-10	---	5.6-7.3	0	0	0.0-2.0	0-2
	3-45	10-30	---	4.5-7.3	0	0	0.0-2.0	0-4
	45-50	10-30	---	4.5-7.3	0-2	0	0.0-2.0	0-4
	50-53	5.0-30	---	4.5-7.3	0-2	0	0.0-2.0	0-8
	53-80	5.0-30	---	6.1-8.4	0-2	0	0.0-2.0	0-10
EdE2:								
Edge------------------	0-4	2.0-10	---	5.6-7.3	0	0	0.0-2.0	0-2
	4-15	10-30	---	4.5-7.3	0	0	0.0-2.0	2-4
	15-40	10-30	---	4.5-7.3	0	0	0.0-2.0	2-4
	40-56	5.0-30	---	4.5-7.8	0-2	0	0.0-2.0	2-8
	56-80	5.0-30	---	6.1-8.4	0-2	0	0.0-2.0	4-15
EgC:								
Edge------------------	0-3	2.0-10	---	5.6-7.3	0	0	0.0-2.0	0-2
	3-28	10-30	---	4.5-7.3	0	0	0.0-2.0	0-4
	28-33	10-30	---	4.5-7.3	0-2	0	0.0-2.0	0-4
	33-50	5.0-30	---	4.5-7.3	0-2	0	0.0-2.0	0-8
	50-80	5.0-30	---	6.1-8.4	0-2	0	0.0-2.0	0-10
EgE:								
Edge------------------	0-5	2.0-10	---	5.6-7.3	0	0	0.0-2.0	0-2
	5-16	10-30	---	4.5-7.3	0	0	0.0-2.0	2-4
	16-32	10-30	---	4.5-7.3	0	0	0.0-2.0	2-4
	32-48	5.0-30	---	4.5-7.3	0-2	0	0.0-2.0	2-8
	48-80	5.0-30	---	6.1-8.4	0-2	0	0.0-2.0	4-15
EkB:								
Elmendorf------------	0-27	20-30	---	6.6-8.4	0-5	0	0	0-7
	27-63	20-50	---	6.6-8.4	0-25	0-10	0.0-6.0	0-13
	63-80	20-35	---	7.4-8.4	2-35	0-25	2.0-16.0	4-35
Denhawken------------	0-6	25-45	---	7.4-8.4	0-15	0	0.0-2.0	0-7
	6-18	25-50	---	7.4-8.4	2-25	0-10	0.0-2.0	0-7
	18-33	30-35	---	7.4-8.4	10-30	0-10	0.0-4.0	0-13
	33-70	30-45	---	7.4-8.4	10-35	2-15	2.0-16.0	4-20
	70-80	25-45	---	7.4-8.4	0-15	0-15	2.0-16.0	4-20
EkC:								
Elmendorf------------	0-11	20-30	---	6.6-8.4	0-5	0	0	0-7
	11-36	20-50	---	6.6-8.4	0-25	0-10	0.0-6.0	0-13
	36-80	20-35	---	7.4-8.4	2-35	0-25	2.0-16.0	4-35
Denhawken------------	0-5	25-45	---	7.4-8.4	0-15	0	0.0-2.0	0-7
	5-21	25-50	---	7.4-8.4	2-25	0-10	0.0-2.0	0-7
	21-42	30-35	---	7.4-8.4	10-30	0-10	0.0-4.0	0-13
	42-60	30-45	---	7.4-8.4	10-35	2-15	2.0-16.0	4-20
	60-80	25-45	---	7.4-8.4	0-15	0-15	2.0-16.0	4-20
EsB:								
Eloso----------------	0-9	30-40	---	6.6-7.8	0	0	0.0-2.0	0
	9-24	30-40	---	7.4-8.4	0-15	0	0.0-2.0	0
	24-37	30-40	---	7.4-8.4	10-20	0	0.0-2.0	0-2
	37-80	30-40	---	7.4-8.4	5-30	0	0.0-2.0	0

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
FnB:								
Flatonia	0-12	10-25	---	5.1-8.4	0	0	0.0-2.0	0
	12-49	35-50	---	6.6-8.4	0-5	0	0.0-2.0	0
	49-54	25-40	---	6.6-8.4	10-35	0-2	0.0-2.0	0
	54-80	---	---	---	---	---	---	---
FsB:								
Frelsburg	0-9	40-60	---	7.4-8.4	5-25	0	0.0-2.0	0-2
	9-72	40-60	---	7.9-8.4	10-20	0-2	0.0-2.0	2-10
	72-80	40-60	---	7.9-8.4	2-45	0-5	0.0-4.0	5-15
FsC:								
Frelsburg	0-10	40-60	---	7.4-8.4	5-25	0	0.0-2.0	0-2
	10-72	40-60	---	7.9-8.4	10-20	0-2	0.0-2.0	2-10
	72-80	40-60	---	7.9-8.4	2-45	0-5	0.0-4.0	5-15
GfA:								
Ganado	0-13	30-50	---	6.6-8.4	0	0	0.0-2.0	0
	13-68	30-50	---	6.6-8.4	0-5	0	0.0-2.0	0
	68-80	25-40	---	7.9-8.4	2-10	0-2	0.0-2.0	0
GhC:								
Gholson	0-12	2.0-10	---	5.6-7.8	0	0	0.0-2.0	0
	12-62	10-20	---	5.6-8.4	0-5	0	0.0-2.0	0
	62-80	5.0-15	---	6.1-8.4	0-5	0	0.0-2.0	0
GkC:								
Gillett	0-5	5.0-10	---	6.1-7.3	0	0	0.0-2.0	0
	5-27	25-35	---	6.1-7.8	0-3	0	0.0-4.0	2-10
	27-34	25-35	---	6.1-7.8	2-5	0-2	0.0-4.0	2-13
	34-80	20-30	---	6.6-8.4	0-2	0	0.0-4.0	2-12
GkF:								
Gillett	0-4	5.0-10	---	6.1-7.3	0	0	0.0-2.0	0
	4-23	25-35	---	6.1-7.8	0	0	0.0-4.0	2-10
	23-34	25-35	---	6.1-7.8	2-5	0-2	0.0-4.0	2-13
	34-80	5.0-15	---	6.6-8.4	0-2	0	0.0-4.0	2-12
GP:								
Pits	0-80	---	---	4.5-8.4	0	0	0.0-8.0	0
GrB:								
Greenvine	0-8	40-50	---	5.1-8.4	0-2	0	0.0-2.0	0
	8-28	35-45	---	5.1-8.4	0-5	0	0.0-2.0	0-2
	28-38	35-45	---	6.6-8.4	0-20	0-2	0.0-2.0	0-2
	38-80	---	---	---	---	---	---	---
GrC:								
Greenvine	0-11	40-50	---	5.1-8.4	0-2	0	0.0-2.0	0
	11-20	35-45	---	5.1-8.4	0-5	0	0.0-2.0	0-2
	20-38	35-45	---	6.6-8.4	0-20	0-2	0.0-2.0	0-2
	38-80	---	---	---	---	---	---	---
GtB:								
Griter	0-7	10-25	---	6.1-7.3	0	0	0.0-2.0	0
	7-37	15-30	---	6.6-8.4	0-2	0-2	0.0-2.0	0
	37-80	15-30	---	7.4-8.4	0-10	0-5	0.0-2.0	0

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
GtC2:								
Griter, eroded-------	0-2	10-25	---	6.1-7.3	0	0	0.0-2.0	0
	2-51	15-30	---	6.6-8.4	0-2	0-2	0.0-2.0	0
	51-80	15-30	---	7.4-8.4	0-10	0-5	0.0-2.0	0
GU:								
Gullied land---------	0-80	---	---	---	---	---	---	---
ImA:								
Imogene--------------	0-4	5.0-12	---	6.1-7.8	0	0	0.0-4.0	0-18
	4-38	6.0-20	---	6.6-8.4	0-5	0-5	4.0-20.0	25-99
	38-68	6.0-15	---	7.4-9.0	0-5	0-7	4.0-16.0	20-99
	68-80	4.0-17	---	7.4-9.0	2-20	2-15	4.0-16.0	15-90
JsC:								
Jedd-----------------	0-12	5.0-10	---	5.6-7.3	0	0	0.0-2.0	0
	12-37	---	15-30	4.5-6.0	0	0	0.0-2.0	0
	37-80	---	---	---	---	---	---	---
JsE:								
Jedd-----------------	0-12	5.0-10	---	5.6-7.3	0	0	0.0-2.0	0
	12-30	---	15-30	4.5-6.0	0	0	0.0-2.0	0
	30-80	---	---	---	---	---	---	---
KuB:								
Kurten---------------	0-5	1.0-7.0	---	5.6-7.3	0	0	0	0
	5-35	25-45	---	4.5-7.3	0	0-5	0	0
	35-50	25-45	---	4.5-7.8	0	0-5	0	0
	50-80	20-30	---	4.5-7.8	0-5	0-5	0	0
LeB:								
Leming---------------	0-15	1.0-8.0	---	6.1-7.3	0	0	0.0-2.0	0
	15-29	1.0-8.0	---	6.1-7.3	0	0	0.0-2.0	0
	29-49	15-35	---	6.1-8.4	0-20	0-5	0.0-4.0	0-2
	49-66	10-25	---	6.6-8.4	0-20	0-5	0.0-4.0	0-2
	66-80	5.0-15	---	6.6-8.4	0-15	0-5	0.0-4.0	0-2
LkA:								
Luckenbach-----------	0-16	10-20	---	6.1-7.8	0	0	0.0-2.0	0
	16-56	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0
	56-80	15-25	---	7.9-8.4	5-15	0	0.0-2.0	0
LkB:								
Luckenbach-----------	0-12	10-20	---	6.1-7.8	0	0	0.0-2.0	0
	12-26	15-25	---	7.4-8.4	5-15	0	0.0-2.0	0
	26-80	15-25	---	7.9-8.4	5-15	0	0.0-2.0	0
LuB:								
Luling---------------	0-14	40-60	---	6.6-8.4	0	0	0.0-2.0	0-2
	14-42	40-60	---	6.6-8.4	1-5	0	0.0-2.0	0-2
	42-63	40-60	---	6.6-8.4	2-10	2-25	0.0-2.0	0-2
	63-80	35-60	---	6.6-8.4	1-10	2-25	0.0-4.0	2-4
LuC:								
Luling---------------	0-9	40-60	---	6.6-8.4	0	0	0.0-2.0	0-2
	9-51	40-60	---	6.6-8.4	1-5	0	0.0-2.0	0-2
	51-55	40-60	---	6.6-8.4	2-10	2-25	0.0-2.0	0-2
	55-80	35-60	---	6.6-8.4	1-10	2-25	0.0-4.0	2-4

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
LuC2:								
Luling, eroded-------	0-3	40-60	---	6.6-8.4	0	0	0.0-2.0	0-2
	3-51	40-60	---	6.6-8.4	1-5	0	0.0-2.0	0-2
	51-60	40-60	---	6.6-8.4	2-10	2-25	0.0-2.0	0-2
	60-80	35-60	---	6.6-8.4	1-10	2-25	0.0-4.0	2-4
MaA:								
Mabank----------------	0-7	5.0-10	---	5.6-7.3	0	0	0.0-2.0	0-3
	7-57	15-30	---	5.6-8.4	0-15	2-22	0.0-2.0	2-10
	57-80	15-30	---	5.6-8.4	0-15	2-22	2.0-8.0	2-13
MeA:								
Meguin----------------	0-16	15-30	---	7.9-8.4	15-30	0	0.0-2.0	0
	16-80	15-25	---	7.9-8.4	15-40	0-1	0.0-2.0	0
MfA:								
Meguin----------------	0-13	15-30	---	7.9-8.4	15-30	0	0.0-2.0	0
	13-80	15-25	---	7.9-8.4	15-40	0-1	0.0-2.0	0
MoB:								
Monteola--------------	0-14	16-36	---	7.4-8.4	0-10	0	0.0-4.0	0-5
	14-41	16-39	---	7.4-8.4	0-10	0-3	2.0-4.0	0-5
	41-70	16-39	---	7.4-8.4	0-15	2-5	2.0-4.0	0-12
	70-80	25-40	---	7.4-9.0	0-15	2-5	4.0-16.0	2-12
MoC:								
Monteola--------------	0-7	16-36	---	7.4-8.4	0-10	0	0.0-4.0	0-5
	7-51	16-39	---	7.4-8.4	0-10	0-3	2.0-4.0	0-5
	51-70	16-39	---	7.4-8.4	0-15	2-5	2.0-4.0	0-12
	70-80	25-40	---	7.4-9.0	0-15	2-5	4.0-16.0	2-12
NaA:								
Navasota--------------	0-7	35-60	---	5.6-7.3	0	0	0.0-2.0	0
	7-25	30-45	---	4.5-6.5	0	0-5	0.0-2.0	0
	25-80	20-40	---	4.5-7.8	0-2	0-5	0.0-2.0	0
NmB:								
Normangee-------------	0-6	15-25	---	5.6-7.3	0	0	0.0-2.0	0-2
	6-53	30-40	---	5.6-8.4	0-5	0-5	2.0-8.0	2-10
	53-80	30-40	---	6.1-8.4	0-5	0-5	2.0-8.0	2-7
NmC:								
Normangee-------------	0-5	15-25	---	5.6-7.3	0	0	0.0-2.0	0-2
	5-50	30-40	---	5.6-8.4	0-5	0-5	2.0-8.0	2-10
	50-80	30-40	---	6.1-8.4	0-5	0-5	2.0-8.0	2-7
NuC:								
Nusil-----------------	0-24	1.0-5.0	---	6.1-7.8	0	0	0	0
	24-35	1.0-5.0	---	6.1-7.8	0	0	0	0
	35-49	10-25	---	6.1-7.8	0-5	0	0.0-2.0	0-8
	49-57	10-25	---	6.1-8.4	0-5	0	0.0-2.0	0-4
	57-80	10-30	---	6.1-8.4	0-15	0	0.0-2.0	0-4
PaC:								
Padina----------------	0-15	2.0-5.0	---	5.6-7.3	0	0	0.0-2.0	0
	15-49	5.0-15	---	5.6-7.3	0	0	0.0-2.0	0
	49-80	10-20	---	5.1-6.5	0	0	0.0-2.0	0

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
PbA:								
Papalote	0-14	5.0-15	---	5.6-7.8	0	0	0.0-2.0	0
	14-39	10-25	---	6.1-8.4	0	0	0.0-2.0	0
	39-80	15-30	---	6.6-8.4	0-5	0	0.0-2.0	0
PbB:								
Papalote	0-7	5.0-15	---	5.1-7.8	0	0	0.0-2.0	0
	7-49	10-25	---	6.1-8.4	0	0	0.0-2.0	0
	49-80	15-30	---	6.6-8.4	0-5	0	0.0-2.0	0
PkB:								
Pavelek	0-11	35-40	---	7.4-8.4	5-10	0	0.0-2.0	0
	11-17	35-40	---	7.4-8.4	20-25	0	0.0-2.0	0
	17-25	---	---	---	40-50	0	0.0-2.0	0
	25-80	30-40	---	7.9-8.4	20-50	0	0.0-2.0	0
RhC:								
Rhymes	0-25	1.0-5.0	---	5.6-7.8	0	0	0.0-2.0	0
	25-48	1.0-5.0	---	5.6-7.8	0	0	0.0-2.0	0
	48-80	8.0-25	---	5.6-8.4	0-5	0	0.0-2.0	0-4
RoB:								
Rosanky	0-12	5.0-15	---	5.1-6.5	0	0	0.0-2.0	0
	12-27	15-30	---	5.1-6.0	0	0	0.0-2.0	0
	27-70	5.0-15	---	5.1-6.0	0	0	0.0-2.0	0
	70-80	---	---	---	---	---	---	---
RoC2:								
Rosanky, eroded	0-3	5.0-15	---	5.1-6.5	0	0	0.0-2.0	0
	3-46	15-30	---	5.1-6.0	0	0	0.0-2.0	0
	46-60	5.0-15	---	5.1-6.0	0	0	0.0-2.0	0
	60-80	---	---	---	---	---	---	---
RsB:								
Rosenbrock	0-8	40-45	---	7.4-8.4	0-2	0	0.0-2.0	0
	8-59	30-45	---	7.4-8.4	5-20	0	0.0-4.0	0-2
	59-80	10-25	---	7.4-8.4	5-30	0	2.0-8.0	4-16
RvA:								
Rutersville	0-12	2.0-5.0	---	5.1-7.3	0	0	0.0-2.0	0-2
	12-30	15-25	---	4.5-6.5	0	0	0.0-2.0	2-5
	30-46	5.0-15	---	4.5-6.5	0-5	0-5	0.0-2.0	2-5
	46-58	5.0-15	---	5.6-7.8	0-5	0-5	0.0-2.0	5-15
	58-80	---	---	---	---	---	---	---
SaD:								
Sarnosa	0-10	20-30	---	7.9-8.4	2-15	0	0.0-2.0	0
	10-63	20-30	---	7.9-8.4	10-40	0	0.0-2.0	0
	63-80	10-25	---	7.9-8.4	10-40	0	0.0-2.0	0
ScC:								
Schattel	0-6	25-40	---	7.4-8.4	2-15	0	0.0-4.0	0-10
	6-52	32-50	---	7.4-8.4	3-50	0-15	2.0-8.0	0-10
	52-80	32-55	---	7.4-8.4	0-30	0-30	4.0-16.0	4-30
ShC:								
Shalba	0-5	5.0-15	---	4.5-6.5	0	0	0.0-2.0	0
	5-18	---	25-40	4.5-6.0	0	0	0.0-2.0	0
	18-80	---	---	---	---	---	---	---

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
SnC:								
Shiner	0-8	15-30	---	7.9-8.4	20-40	0	0.0-2.0	0
	8-16	15-30	---	7.9-8.4	40-70	0	0.0-2.0	0
	16-25	10-30	---	7.9-8.4	20-60	0	0.0-2.0	0
	25-80	15-30	---	7.9-8.4	35-60	0	0.0-2.0	0
SnE:								
Shiner	0-8	15-30	---	7.9-8.4	20-40	0	0.0-2.0	0
	8-16	15-30	---	7.9-8.4	40-70	0	0.0-2.0	0
	16-35	10-30	---	7.9-8.4	20-60	0	0.0-2.0	0
	35-80	15-30	---	7.9-8.4	35-60	0	0.0-2.0	0
SoC:								
Shiro	0-8	2.0-7.0	---	5.1-6.5	0	0	0.0-2.0	0-2
	8-12	---	15-30	4.5-5.5	0	0	0.0-2.0	0-2
	12-34	15-30	---	4.5-7.3	0	0	0.0-2.0	0-2
	34-80	---	---	---	---	---	---	---
SsC:								
Silstid	0-26	2.0-5.0	---	5.6-7.3	0	0	0.0-2.0	0
	26-30	2.0-5.0	---	5.6-7.3	0	0	0.0-2.0	0
	30-54	3.0-10	---	5.1-6.5	0	0	0.0-2.0	0
	54-80	3.0-10	---	5.1-6.5	0	0	0.0-2.0	0
SvD:								
Silvern	0-69	0.0-3.0	---	5.1-6.5	0	0	0.0-2.0	0
	69-80	---	7.0-15	3.6-5.5	0	0	0.0-2.0	0
SwA:								
Singleton	0-12	2.0-10	---	5.1-6.5	0	0	0.0-2.0	0-2
	12-30	---	30-40	4.5-6.0	0	0	0.0-2.0	1-4
	30-35	---	25-40	4.5-6.0	0-5	0	0.0-4.0	2-5
	35-60	25-35	---	4.5-7.8	0-10	0-10	0.0-4.0	2-5
	60-80	---	---	---	---	---	---	---
SwC:								
Singleton	0-7	2.0-10	---	5.1-6.5	0	0	0.0-2.0	0-2
	7-21	---	30-40	4.5-6.0	0	0	0.0-2.0	1-4
	21-33	---	25-40	4.5-6.0	0-5	0	0.0-4.0	2-5
	33-37	25-35	---	4.5-7.8	0-10	0-10	0.0-4.0	2-5
	37-80	---	---	---	---	---	---	---
SxB:								
Styx	0-12	5.0-10	---	5.1-7.3	0	0	0.0-2.0	0
	12-27	5.0-10	---	5.1-7.3	0	0	0.0-2.0	0
	27-80	15-25	---	4.5-6.5	0	0	0.0-2.0	0
SyC:								
Sunev	0-9	10-20	---	7.9-8.4	10-40	0	0.0-2.0	0
	9-45	15-25	---	7.9-8.4	40-70	0	0.0-2.0	0
	45-80	15-25	---	7.9-8.4	40-70	0	0.0-2.0	0
SyE:								
Sunev	0-15	10-20	---	7.9-8.4	10-40	0	0.0-2.0	0
	15-34	15-25	---	7.9-8.4	40-70	0	0.0-2.0	0
	34-80	15-25	---	7.9-8.4	40-70	0	0.0-2.0	0

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
TbA:								
Tabor	0-13	2.0-5.0	---	5.1-6.5	0	0	0.0-2.0	0
	13-46	15-25	---	4.5-7.3	0	0	0.0-2.0	2-6
	46-80	10-20	---	5.1-8.4	0-2	0-2	0.0-2.0	5-10
TbB:								
Tabor	0-6	2.0-5.0	---	5.1-6.5	0	0	0.0-2.0	0
	6-64	15-25	---	4.5-7.3	0	0	0.0-2.0	2-6
	64-80	10-20	---	5.1-8.4	0-2	0-2	0.0-2.0	5-10
TnA:								
Tinn	0-7	30-45	---	7.4-8.4	2-10	0	0.0-2.0	0
	7-39	35-50	---	7.4-8.4	10-20	0	0.0-2.0	0-6
	39-80	35-50	---	7.4-8.4	10-25	0-2	0.0-2.0	0-6
ToA:								
Tinn	0-8	30-45	---	7.4-8.4	2-10	0	0.0-2.0	0
	8-29	35-50	---	7.4-8.4	10-20	0	0.0-2.0	0-6
	29-80	35-50	---	7.4-8.4	10-25	0-2	0.0-2.0	0-6
TrB:								
Tordia	0-14	25-50	---	6.6-8.4	0-5	0	0.0-2.0	0
	14-36	25-50	---	6.6-8.4	0-5	0-3	0.0-2.0	0
	36-44	25-50	---	6.6-8.4	0-5	0-5	0.0-2.0	0
	44-80	25-50	---	6.6-8.4	0-2	0-2	0.0-4.0	0-2
TtC:								
Tremona	0-30	1.0-5.0	---	5.1-6.5	0	0	0.0-2.0	0
	30-63	---	15-25	4.5-6.0	0-2	0	0.0-2.0	0
	63-80	10-25	---	5.1-8.4	0-10	0	0.0-2.0	0
W:								
Water	---	---	---	---	---	---	---	---
WaA:								
Waelder	0-14	5.0-20	---	5.6-7.3	0	0	0.0-2.0	0
	14-57	5.0-15	---	6.1-7.8	0	0	0.0-2.0	0
	57-64	1.0-10	---	6.1-7.8	0	0	0.0-2.0	0
	64-80	5.0-20	---	6.6-7.8	0	0	0.0-2.0	0
WeA:								
Waelder	0-16	5.0-20	---	5.6-7.3	0	0	0.0-2.0	0
	16-51	5.0-15	---	6.1-7.8	0	0	0.0-2.0	0
	51-78	1.0-10	---	6.1-7.8	0	0	0.0-2.0	0
	78-80	5.0-20	---	6.6-7.8	0	0	0.0-2.0	0
WsC:								
Weesatche	0-11	10-25	---	6.6-7.8	0-2	0	0.0-2.0	0
	11-56	15-25	---	7.4-8.4	0-10	0	0.0-2.0	0
	56-80	15-30	---	7.9-8.4	25-55	0-2	0.0-2.0	0-2
WwA:								
Wilson	0-5	20-30	---	5.6-7.3	0	0	0.0-2.0	0-2
	5-66	20-30	---	5.6-7.8	1-10	0-4	0.0-4.0	2-10
	66-80	20-30	---	6.6-8.4	1-20	2-15	2.0-8.0	4-13

Table 27.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
ZkB:								
Zack	0-10	5.0-10	---	5.1-6.5	0	0	0.0-2.0	0
	10-20	30-45	---	5.6-7.3	0	0	0.0-2.0	0
	20-30	30-45	---	5.6-8.4	0-1	0	0.0-2.0	0-8
	30-38	20-30	---	6.6-8.4	0-1	0	0.0-2.0	0-8
	38-80	15-30	---	7.4-8.4	0-1	0	0.0-4.0	2-10
ZuB:								
Zulch	0-6	1.0-6.0	---	5.6-7.3	0	0	0.0-2.0	0
	6-32	30-45	---	5.6-7.8	0-2	0	0.0-2.0	1-5
	32-39	40-50	---	6.1-7.8	0-2	0-2	0.0-2.0	1-6
	39-80	40-50	---	6.6-8.4	0-2	0-2	0.0-2.0	1-6

Table 28.--Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
AmB:									
Alum	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ApC:									
Arenosa	A								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ArA:									
Arol	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
ArB:									
Arol	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
AxB:									
Axtell	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
AxC:									
Axtell	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
AxE:									
Axtell	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
BnB:									
Benchley	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
BoA:									
Bosque	B								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Brief	Frequent
		October	---	---	---	---	None	Brief	Frequent
		November	---	---	---	---	None	Brief	Frequent
		December	---	---	---	---	None	Brief	Frequent

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
BpA:									
Bosque	B								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Brief	Frequent
		October	---	---	---	---	None	Brief	Frequent
		November	---	---	---	---	None	Brief	Frequent
		December	---	---	---	---	None	Brief	Frequent
Tinn	D								
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Brief	Frequent
BrA:									
Branyon	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
BtB:									
Bryde	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
BuA:									
Buchel	D								
		January	---	---	---	---	None	Very brief	Occasional
		February	---	---	---	---	None	Very brief	Occasional
		March	---	---	---	---	None	Very brief	Occasional
		April	---	---	---	---	None	Very brief	Occasional
		May	---	---	---	---	None	Very brief	Occasional
		June	---	---	---	---	None	Very brief	Occasional
		July	---	---	---	---	None	Very brief	Occasional
		August	---	---	---	---	None	Very brief	Occasional
		September	---	---	---	---	None	Very brief	Occasional
		October	---	---	---	---	None	Very brief	Occasional
		November	---	---	---	---	None	Very brief	Occasional
		December	---	---	---	---	None	Very brief	Occasional
BvA:									
Buchel	D								
		January	---	---	---	---	None	Very brief	Frequent
		February	---	---	---	---	None	Very brief	Frequent
		March	---	---	---	---	None	Very brief	Frequent
		April	---	---	---	---	None	Very brief	Frequent
		May	---	---	---	---	None	Very brief	Frequent
		June	---	---	---	---	None	Very brief	Frequent
		July	---	---	---	---	None	Very brief	Frequent
		August	---	---	---	---	None	Very brief	Frequent
		September	---	---	---	---	None	Very brief	Frequent
		October	---	---	---	---	None	Very brief	Frequent
		November	---	---	---	---	None	Very brief	Frequent
		December	---	---	---	---	None	Very brief	Frequent
BwB:									
Burlewash	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
BwC2:									
Burlewash, eroded	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
BwE:									
Burlewash	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CaB:									
Cadell	D								
		January	1.5-3.5	2.0-4.0	---	---	None	---	None
		February	1.5-3.5	2.0-4.0	---	---	None	---	None
		March	1.5-3.5	2.0-4.0	---	---	None	---	None
		April	1.5-3.5	2.0-4.0	---	---	None	---	None
		May	1.5-3.5	2.0-4.0	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	1.5-3.5	2.0-4.0	---	---	None	---	None
		November	1.5-3.5	2.0-4.0	---	---	None	---	None
		December	1.5-3.5	2.0-4.0	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
CbB:									
Carbengle-----------------	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CbC:									
Carbengle-----------------	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CbC2:									
Carbengle, eroded---------	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
CbE:									
Carbengle	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ChA:									
Chazos	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ChB:									
Chazos	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
CnB:									
Conquista------------------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CnG:									
Conquista------------------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CoA:									
Cost-----------------------	D								
		January	1.0-3.0	>6.0	---	---	None	Brief	Occasional
		February	1.0-3.0	>6.0	---	---	None	Brief	Occasional
		March	1.0-3.0	>6.0	---	---	None	Brief	Occasional
		April	1.0-3.0	>6.0	---	---	None	Brief	Occasional
		May	1.0-3.0	>6.0	---	---	None	Brief	Occasional
		September	1.0-3.0	>6.0	---	---	None	---	---
		October	1.0-3.0	>6.0	---	---	None	---	---
		November	1.0-3.0	>6.0	---	---	None	---	---
		December	1.0-3.0	>6.0	---	---	None	Brief	Occasional

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
CpB:									
Coy	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CrB:									
Crockett	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CrC2:									
Crockett, eroded	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
CsB:									
Crockett------------------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CsC2:									
Crockett, eroded----------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
CuB:									
Cuero---------------------	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
DeA:									
Degola	B								
		June	---	---	---	---	None	Brief	Occasional
		July	---	---	---	---	None	Brief	Occasional
		August	---	---	---	---	None	Brief	Occasional
		September	---	---	---	---	None	Brief	Occasional
DfA:									
Degola	B								
		June	---	---	---	---	None	Brief	Frequent
		July	---	---	---	---	None	Brief	Frequent
		August	---	---	---	---	None	Brief	Frequent
		September	---	---	---	---	None	Brief	Frequent
DmB:									
Dimebox	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
DyC2:									
Dreyer, eroded	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
DyE:									
Dreyer	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EcB:									
Ecleto	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EcC:									
Ecleto	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
EdB:									
Edge	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EdC2:									
Edge, eroded	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EdD3:									
Edge, severely eroded	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
EdE2:									
Edge	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EgC:									
Edge	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EgE:									
Edge	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
EkB:									
Elmendorf	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
Denhawken	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EkC:									
Elmendorf	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
Ekc:									
Denhawken	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
EsB:									
Eloso	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
FnB:									
Flatonia	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
FsB:									
Frelsburg	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
FsC:									
Frelsburg	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
GfA:									
Ganado	D								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Brief	Frequent
		June	---	---	---	---	None	Brief	Frequent
		July	---	---	---	---	None	Brief	Frequent
		August	---	---	---	---	None	Brief	Frequent
		September	---	---	---	---	None	Brief	Frequent
		October	---	---	---	---	None	Brief	Frequent
		November	---	---	---	---	None	Brief	Frequent
		December	---	---	---	---	None	Brief	Frequent

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
GhC:									
Gholson	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
GkC:									
Gillett	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
GkF:									
Gillett	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
GP:									
Pits	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
GrB:									
Greenvine	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
GrC:									
Greenvine	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
GtB:									
Griter	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
GtC2:									
Griter, eroded	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
GU:									
Gullied land	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
ImA:									
Imogene	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
JsC:									
Jedd	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
JsE:									
Jedd	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
KuB:									
Kurten	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
LeB:									
Leming	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
LkA:									
Luckenbach	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
LkB:									
Luckenbach----------------	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
LuB:									
Luling--------------------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
LuC:									
Luling--------------------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
LuC2:									
Luling, eroded	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
MaA:									
Mabank	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
MeA:									
Meguin	B								
		June	---	---	---	---	None	Brief	Occasional
		July	---	---	---	---	None	Brief	Occasional
		August	---	---	---	---	None	Brief	Occasional
		September	---	---	---	---	None	Brief	Occasional
MfA:									
Meguin	B								
		June	---	---	---	---	None	Brief	Frequent
		July	---	---	---	---	None	Brief	Frequent
		August	---	---	---	---	None	Brief	Frequent
		September	---	---	---	---	None	Brief	Frequent

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
MoB:									
Monteola	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
MoC:									
Monteola	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
NaA:									
Navasota	D								
		January	1.0-2.5	2.0-4.0	0.0-0.1	Long	Frequent	Very long	Frequent
		February	1.0-2.5	2.0-4.0	---	---	None	Very long	Frequent
		March	1.0-2.5	2.0-4.0	---	---	None	Very long	Frequent
		April	1.0-2.5	2.0-4.0	---	---	None	Very long	Frequent
		May	1.0-2.5	2.0-4.0	---	---	None	Very long	Frequent
		October	1.0-2.5	2.0-4.0	---	---	None	Very long	Frequent
		November	1.0-2.5	2.0-4.0	---	---	None	Very long	Frequent
		December	1.0-2.5	2.0-4.0	---	---	None	Very long	Frequent

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
NmB:									
Normangee	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
NmC:									
Normangee	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
NuC:									
Nusil	A								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
PaC:									
Padina	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
PbA:									
Papalote	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
PbB:									
Papalote	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
PkB:									
Pavelek	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
RhC:									
Rhymes	A								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
RoB:									
Rosanky	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
RoC2:									
Rosanky, eroded-----------	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
RsB:									
Rosenbrock----------------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
RvA:									
Rutersville---------------	C								
		January	2.5-4.0	3.5-5.0	---	---	None	---	None
		February	2.5-4.0	3.5-5.0	---	---	None	---	None
		March	2.5-4.0	3.5-5.0	---	---	None	---	None
		April	2.5-4.0	3.5-5.0	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	2.5-4.0	3.5-5.0	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
SaD:									
Sarnosa	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ScC:									
Schattel	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ShC:									
Shalba	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
SnC:									
Shiner	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
SnE:									
Shiner	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
SoC:									
Shiro	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
SsC:									
Silstid	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
SvD:									
Silvern	A								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
SwA:									
Singleton	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
SwC:									
Singleton------------------	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
SxB:									
Styx-----------------------	B								
		January	3.5-4.5	4.0-5.0	---	---	None	---	None
		February	3.5-4.5	4.0-5.0	---	---	None	---	None
		March	3.5-4.5	4.0-5.0	---	---	None	---	None
		April	3.5-4.5	4.0-5.0	---	---	None	---	None
		May	3.5-4.5	4.0-5.0	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	3.5-4.5	4.0-5.0	---	---	None	---	None
SyC:									
Sunev----------------------	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
SyE:									
Sunev	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
TbA:									
Tabor	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
TbB:									
Tabor	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
TnA:									
Tinn	D								
		February	---	---	---	---	None	Brief	Occasional
		March	---	---	---	---	None	Brief	Occasional
		April	---	---	---	---	None	Brief	Occasional
		May	---	---	---	---	None	Brief	Occasional
ToA:									
Tinn	D								
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Brief	Frequent
TrB:									
Tordia	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
TtC:									
Tremona	C								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	1.5-3.5	2.0-4.0	---	---	None	---	None
		July	1.5-3.5	2.0-4.0	---	---	None	---	None
		August	1.5-3.5	2.0-4.0	---	---	None	---	None
		September	1.5-3.5	2.0-4.0	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
W:									
Water	---								
		Jan-Dec	---	---	---	---	None	---	---

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
WaA:									
Waelder	B								
		January	---	---	---	---	None	Brief	Occasional
		February	---	---	---	---	None	Brief	Occasional
		March	---	---	---	---	None	Brief	Occasional
		April	---	---	---	---	None	Brief	Occasional
		May	---	---	---	---	None	Brief	Occasional
		June	---	---	---	---	None	Brief	Occasional
		September	---	---	---	---	None	Brief	Occasional
		October	---	---	---	---	None	Brief	Occasional
		November	---	---	---	---	None	Brief	Occasional
		December	---	---	---	---	None	Brief	Occasional
WeA:									
Waelder	B								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Brief	Frequent
		June	---	---	---	---	None	Brief	Frequent
		September	---	---	---	---	None	Brief	Frequent
		October	---	---	---	---	None	Brief	Frequent
		November	---	---	---	---	None	Brief	Frequent
		December	---	---	---	---	None	Brief	Frequent
WsC:									
Weesatche	B								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 28.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
WwA:									
Wilson	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ZkB:									
Zack	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None
ZuB:									
Zulch	D								
		January	---	---	---	---	None	---	None
		February	---	---	---	---	None	---	None
		March	---	---	---	---	None	---	None
		April	---	---	---	---	None	---	None
		May	---	---	---	---	None	---	None
		June	---	---	---	---	None	---	None
		July	---	---	---	---	None	---	None
		August	---	---	---	---	None	---	None
		September	---	---	---	---	None	---	None
		October	---	---	---	---	None	---	None
		November	---	---	---	---	None	---	None
		December	---	---	---	---	None	---	None

Table 29.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
AmB:						
Alum	---	---	---	---	High	Moderate
ApC:						
Arenosa	---	---	---	---	Low	Low
ArA:						
Arol	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Moderate
ArB:						
Arol	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Moderate
AxB:						
Axtell	---	---	---	---	High	Moderate
AxC:						
Axtell	---	---	---	---	High	Moderate
AxE:						
Axtell	---	---	---	---	High	Moderate
BnB:						
Benchley	---	---	---	---	High	Moderate
BoA:						
Bosque	---	---	---	---	High	Low
BpA:						
Bosque	---	---	---	---	High	Low
Tinn	---	---	---	---	High	Low
BrA:						
Branyon	---	---	---	---	High	Low
BtB:						
Bryde	Bedrock (paralithic)	40-60	---	Weakly cemented	High	Low
BuA:						
Buchel	---	---	---	---	High	Low
BvA:						
Buchel	---	---	---	---	High	Low
BwB:						
Burlewash	Bedrock (paralithic)	20-40	---	Weakly cemented	High	High
BwC2:						
Burlewash, eroded	Bedrock (paralithic)	20-40	---	Weakly cemented	High	High
BwE:						
Burlewash	Bedrock (paralithic)	20-40	---	Weakly cemented	High	High

Table 29.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
CaB:						
Cadell	---	40-60	---	---	High	Low
CbB:						
Carbengle	Bedrock (paralithic)	20-40	---	Weakly cemented	Moderate	Low
CbC:						
Carbengle	Bedrock (paralithic)	20-40	---	Weakly cemented	Moderate	Low
CbC2:						
Carbengle, eroded	Bedrock (paralithic)	20-40	---	Weakly cemented	Moderate	Low
CbE:						
Carbengle	Bedrock (paralithic)	20-40	---	Weakly cemented	Moderate	Low
ChA:						
Chazos	---	---	---	---	High	Moderate
ChB:						
Chazos	---	---	---	---	High	Moderate
CnB:						
Conquista	---	---	---	---	High	Low
CnG:						
Conquista	---	---	---	---	High	Low
CoA:						
Cost	---	---	---	---	High	High
CpB:						
Coy	---	---	---	---	High	Low
CrB:						
Crockett	---	---	---	---	High	Low
CrC2:						
Crockett, eroded	---	---	---	---	High	Low
CsB:						
Crockett	---	---	---	---	High	Low
CsC2:						
Crockett, eroded	---	---	---	---	High	Low
CuB:						
Cuero	Bedrock (paralithic)	60-80	---	Weakly cemented	High	Low
DeA:						
Degola	---	---	---	---	Moderate	Low
DfA:						
Degola	---	---	---	---	Moderate	Low

Table 29.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
DmB:						
Dimebox	---	---	---	---	High	High
DyC2:						
Dreyer, eroded	---	---	---	---	High	Low
DyE:						
Dreyer	---	---	---	---	High	Low
EcB:						
Ecleto	Bedrock (paralithic)	10-20	---	Weakly cemented	High	Low
EcC:						
Ecleto	Bedrock (paralithic)	10-20	---	Weakly cemented	High	Low
EdB:						
Edge	---	---	---	---	Moderate	Moderate
EdC2:						
Edge, eroded	---	---	---	---	Moderate	Moderate
EdD3:						
Edge, severely eroded	---	---	---	---	Moderate	Moderate
EdE2:						
Edge	---	---	---	---	Moderate	Moderate
EgC:						
Edge	---	---	---	---	Moderate	Moderate
EgE:						
Edge	---	---	---	---	Moderate	Moderate
EkB:						
Elmendorf	---	---	---	---	High	Low
Denhawken	---	---	---	---	High	Low
EkC:						
Elmendorf	---	---	---	---	High	Low
Denhawken	---	---	---	---	High	Low
EsB:						
Eloso	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Low
FnB:						
Flatonia	Bedrock (paralithic)	40-60	---	Weakly cemented	High	Low
FsB:						
Frelsburg	---	---	---	---	High	Low
FsC:						
Frelsburg	---	---	---	---	High	Low
GfA:						
Ganado	---	---	---	---	High	Low

Table 29.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
GhC:						
Gholson	---	---	---	---	Moderate	Low
GkC:						
Gillett	Bedrock (densic)	20-40	---	Noncemented	High	Low
GkF:						
Gillett	Bedrock (densic)	20-40	---	Noncemented	High	Low
GP:						
Pits	---	---	---	---	High	Low
GrB:						
Greenvine	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Low
GrC:						
Greenvine	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Low
GtB:						
Griter	---	---	---	---	High	Low
GtC2:						
Griter, eroded	---	---	---	---	High	Low
GU:						
Gullied land	---	---	---	---	Low	High
ImA:						
Imogene	---	---	---	---	High	Moderate
JsC:						
Jedd	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Moderate
JsE:						
Jedd	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Moderate
KuB:						
Kurten	---	---	---	---	High	Moderate
LeB:						
Leming	---	---	---	---	High	Low
LkA:						
Luckenbach	---	---	---	---	Moderate	Low
LkB:						
Luckenbach	---	---	---	---	Moderate	Low
LuB:						
Luling	---	---	---	---	High	Low
LuC:						
Luling	---	---	---	---	High	Low
LuC2:						
Luling, eroded	---	---	---	---	High	Low

Table 29.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
MaA:						
Mabank	---	---	---	---	High	Moderate
MeA:						
Meguin	---	---	---	---	High	Low
MfA:						
Meguin	---	---	---	---	High	Low
MoB:						
Monteola	---	---	---	---	High	Low
MoC:						
Monteola	---	---	---	---	High	Low
NaA:						
Navasota	---	---	---	---	High	Moderate
NmB:						
Normangee	---	---	---	---	High	Low
NmC:						
Normangee	---	---	---	---	High	Low
NuC:						
Nusil	---	---	---	---	Low	Moderate
PaC:						
Padina	---	---	---	---	High	Moderate
PbA:						
Papalote	---	---	---	---	High	Low
PbB:						
Papalote	---	---	---	---	High	Low
PkB:						
Pavelek	Petrocalcic	10-20	0-3	Strongly cemented	High	Low
RhC:						
Rhymes	---	---	---	---	Low	Moderate
RoB:						
Rosanky	Bedrock (paralithic)	60-80	---	Weakly cemented	High	Low
RoC2:						
Rosanky, eroded	Bedrock (paralithic)	60-80	---	Weakly cemented	High	Low
RsB:						
Rosenbrock	---	---	---	---	High	Low
RvA:						
Rutersville	Bedrock (paralithic)	40-60	---	Weakly cemented	High	High
SaD:						
Sarnosa	---	---	---	---	Moderate	Low

Table 29.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
ScC:						
Schattel	---	---	---	---	High	Low
ShC:						
Shalba	Bedrock (paralithic)	7-20	---	Weakly cemented	High	Moderate
SnC:						
Shiner	Bedrock (paralithic)	10-20	---	Weakly cemented	Moderate	Low
SnE:						
Shiner	Bedrock (paralithic)	10-20	---	Weakly cemented	Moderate	Low
SoC:						
Shiro	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Moderate
SsC:						
Silstid	---	---	---	---	Moderate	Moderate
SvD:						
Silvern	---	---	---	---	Moderate	High
SwA:						
Singleton	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Moderate
SwC:						
Singleton	Bedrock (paralithic)	20-40	---	Weakly cemented	High	Moderate
SxB:						
Styx	---	---	---	---	Moderate	Moderate
SyC:						
Sunev	---	---	---	---	High	Low
SyE:						
Sunev	---	---	---	---	High	Low
TbA:						
Tabor	---	---	---	---	High	High
TbB:						
Tabor	---	---	---	---	High	High
TnA:						
Tinn	---	---	---	---	High	Low
ToA:						
Tinn	---	---	---	---	High	Low
TrB:						
Tordia	---	---	---	---	High	Low
TtC:						
Tremona	---	---	---	---	High	High

Table 29.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In			
W:						
Water	---	---	---	---	---	---
WaA:						
Waelder	---	---	---	---	Low	Moderate
WeA:						
Waelder	---	---	---	---	Low	Moderate
WsC:						
Weesatche	---	---	---	---	High	Low
WwA:						
Wilson	---	---	---	---	High	High
ZkB:						
Zack	---	---	---	---	High	Low
ZuB:						
Zulch	---	---	---	---	High	Moderate

Table 30.--Physical Analyses of Selected Soils

(Analyses by USDA-NRCS National Soil Survey Laboratory, Lincoln, Nebraska. TR indicates a trace amount. Dashes indicate that analyses were not made)

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2.0-1.0 mm)	Sand: Coarse (1.0-0.5mm)	Sand: Medium (0.5-0.25mm)	Sand: Fine (0.25-0.1 mm)	Sand: Very fine (0.1-0.05 mm)	Sand: Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.02 mm)	Water content: 15 bar	Bulk density: 1/3 bar
	In		Pct								Pct(wt)	g/cc
Cost: (2)												
(S93TX-177-005)	0-3	A	TR	0.1	0.8	30.2	49.4	80.5	18.7	0.8	2.9	---
	3-9	Btnzg1	TR	0.1	0.7	20.2	31.3	52.3	29.3	18.4	12.6	---
	9-17	Btnzg2	0.1	0.1	0.5	21.7	18.3	40.7	32.9	26.4	15.6	---
	17-30	Btnzg3	TR	TR	0.3	13.1	18.6	32.0	41.4	26.6	17.1	---
	30-48	2Bnzg1	0.1	0.1	2.5	48.1	36.7	87.5	10.5	2.0	2.2	---
	48-60	2Bnzg2	0.1	TR	0.7	19.9	33.7	54.4	28.0	17.6	10.6	---
	60-80	3Cnzg	0.1	0.1	2.8	64.7	22.9	90.6	7.0	2.4	2.2	---
Denhawken: (1)												
(S93TX-177-007)	0-6	A	0.9	1.3	3.5	12.5	29.2	47.4	21.0	31.6	16.0	---
	6-11	BA	0.6	0.8	2.3	7.5	21.9	33.1	26.1	40.8	17.8	---
	11-18	Bk	0.5	0.9	1.9	5.8	18.4	27.5	29.2	43.3	18.8	---
	18-33	Bkss1	0.7	0.7	1.6	5.3	17.2	25.5	29.8	44.7	20.1	---
	33-45	Bkss2	0.4	0.7	1.5	4.2	15.3	22.1	33.4	44.5	21.5	---
	45-55	BCky1	0.4	0.4	0.6	1.4	12.5	15.3	35.9	48.8	25.3	---
	55-70	BCky2	0.4	0.6	0.7	1.9	19.6	23.2	30.6	46.2	25.9	---
	70-80	Cky	0.4	0.8	1.7	3.9	6.8	13.6	35.7	50.7	31.8	---
Elemndorf: (1)	0-4	A1	0.5	1.1	5.8	18.7	32.4	58.5	18.7	22.8	12.8	---
(S93TX-177-006)	4-15	A2	0.5	1.0	5.6	17.3	29.5	53.9	17.5	28.6	14.8	---
	15-27	BA	0.3	1.2	6.0	15.7	27.8	51.0	20.1	28.9	15.7	---
	27-39	Btss1	0.4	0.8	4.9	14.1	25.0	45.2	21.5	33.3	19.3	---
	39-46	Btss2	0.6	0.9	3.9	11.3	21.5	38.2	21.8	40.0	21.7	---
	46-54	Btss3	0.2	0.5	1.7	5.0	16.8	24.2	24.4	51.4	25.9	---
	54-63	Bky	TR	0.4	1.0	2.8	15.6	19.8	33.7	46.5	25.1	---
	63-67	BCk	---	0.1	0.7	2.3	18.0	21.1	31.2	47.7	26.5	---
	67-80	2C	0.3	0.8	1.2	3.9	30.6	36.8	27.5	35.7	22.5	---

See footnotes at end of table

Table 30.--Physical Analyses of Selected Soils--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2.0-1.0 mm)	Sand: Coarse (1.0-0.5mm)	Sand: Medium (0.5-0.25mm)	Sand: Fine (0.25-0.1 mm)	Sand: Very fine (0.1-0.05 mm)	Sand: Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.02 mm)	Water content: 15 bar	Bulk density: 1/3 bar
	In		----- Pct -----							Pct(wt)		g/cc
Griter: (1)												
(S93TX-177-008)	0-7	A	1.6	1.0	4.4	42.9	24.7	74.6	15.3	10.1	5.0	1.55
	7-16	Bt1	1.2	0.7	2.7	23.8	16.5	44.9	13.0	42.1	18.9	1.50
	16-27	Bt2	1.4	0.7	2.8	25.1	21.6	51.6	18.9	29.5	15.1	1.54
	27-37	Bt3	0.6	0.9	2.4	20.8	33.3	58.0	21.3	20.7	12.6	1.49
	37-51	BCt1	1.5	1.9	6.8	27.4	18.9	56.5	22.2	21.3	14.1	1.59
	51-56	BCt2	0.8	1.5	7.9	31.4	20.6	62.2	17.7	20.1	12.4	1.52
	56-80	C	---	---	---	---	---	---	---	---	11.3	1.54
Waelder: (1)												
(S93TX-177-004)	0-6	A1	TR	0.1	2.9	20.6	17.3	40.9	37.3	21.8	10.0	---
	6-16	A2	TR	1.0	2.0	20.5	20.5	43.1	36.7	20.2	11.4	---
	16-31	Bw1	TR	TR	0.4	27.6	45.6	73.6	15.6	10.8	8.8	---
	31-37	Bw2	TR	0.1	0.5	18.8	45.2	64.6	22.0	13.4	6.4	---
	37-43	Bw3	---	TR	0.4	27.8	45.4	73.6	18.5	7.9	5.3	---
	43-51	Bw4	0.1	0.1	1.4	16.7	43.0	61.3	27.6	11.1	6.2	---
	51-67	Ab1	0.1	0.6	9.0	39.1	31.3	80.1	15.5	4.4	2.9	---
	67-78	Ab2	---	0.5	11.8	46.3	26.0	84.6	13.1	2.3	1.9	---
	78-80	Bwb	0.2	0.9	10.6	32.8	19.4	63.9	13.4	22.7	11.2	---

(1) Location of pedon sample is the same as the pedon given as typical for series in "Soil Series and Their Morphology."

(2) Location of the sampled pedon of Cost soil: from the intersection of U.S. Highway 87 and Farm Road 1116 about 4 miles southeast of Smiley; 6.6 miles north on Farm Road 1116, 0.2 mile west and 1,000 feet in rangeland.

Table 31.--Chemical Analyses of Selected Soils

(Analyses by USDA-NRCS National Soil Survey Laboratory, Lincoln, Nebraska. TR indicates a trace amount. Dashes indicate that analyses were not made)

Soil name and sample number	Depth	Horizon	Extractable bases				Cation Exchange Capacity	Base satura- tion	pH 1:1 (soil: water)	Organic carbon	Exchange- able sodium (ESP)	Sodium adsorption ratio (SAR)	Electrical Conductivity (EC)
			Ca	Mg	K	Na							
	In		---Meq/100g---					Pct	pH	Pct	Pct		mmhos/cm
Cost: (2,3)													
(S93TX-177-005)	0-3	A	1.4	0.4	0.1	21.1	2.6	100	8.3	0.65	76.0	247.0	34.1
	3-9	Btnzg1	TR	0.9	0.8	23.4	13.8	100	8.8	0.35	84.0	191.0	16.5
	9-17	Btnzg2	4.9	1.6	1.1	35.8	18.6	100	8.8	0.14	94.0	206.0	18.2
	17-30	Btnzg3	4.6	1.4	1.0	36.1	18.3	100	8.8	0.12	98.0	218.0	20.0
	30-48	2Bnzg1	1.4	0.2	0.2	14.6	3.1	100	9.2	0.03	114.0	255.0	26.5
	48-60	2Bnzg2	0.9	0.5	0.6	28.3	14.3	100	8.7	0.06	117.0	149.0	14.9
	60-80	3Cnzg	1.0	0.2	0.3	14.1	3.1	100	9.4	---	171.0	279.0	22.0
Denhawken: (1,3)													
(S93TX-177-007)	0-6	A	---	1.7	0.8	0.2	26.8	100	7.8	1.84	1.0	TR	0.81
	6-11	BA	---	2.3	0.7	0.3	27.6	100	8.0	1.00	1.0	TR	0.54
	11-18	Bk	---	3.4	0.8	0.5	32.4	100	8.2	0.58	1.0	1.0	0.48
	18-33	Bkss1	---	4.3	0.7	1.7	33.2	100	8.4	0.38	4.0	3.0	0.54
	33-45	Bkss2	---	4.7	0.7	3.7	36.2	100	8.0	0.26	8.0	6.0	1.74
	45-55	BCky1	---	4.8	0.9	5.3	36.1	100	7.7	0.10	8.0	6.0	4.83
	55-70	BCky2	---	4.8	1.5	6.1	40.6	100	7.6	0.15	10.0	7.0	3.03
	70-80	Cky	---	5.2	0.9	6.3	42.1	100	7.5	0.04	8.0	7.0	4.77
Elemndorf: (1,3)	0-4	A1	26.4	2.2	0.9	0.2	24.5	100	7.3	1.67	1.0	TR	0.85
(S93TX-177-006)	4-15	A2	27.8	2.5	0.8	0.3	30.8	100	7.3	1.43	1.0	---	---
	15-27	BA	28.8	2.6	0.8	0.6	32.3	100	7.4	1.43	2.0	---	---
	27-39	Btss1	33.4	3.6	0.7	1.7	37.5	100	8.0	1.21	4.0	3.0	0.52
	39-46	Btss2	---	4.6	0.9	3.5	38.2	100	8.0	0.85	8.0	6.0	0.83
	46-54	Btss3	---	5.8	1.1	6.6	46.0	100	7.6	0.54	9.0	7.0	4.21
	54-63	Bky	---	4.7	0.8	6.7	37.9	100	7.6	0.22	10.0	7.0	5.41
	63-67	BCk	---	5.0	0.9	7.5	39.0	100	7.6	0.06	11.0	8.0	5.33
	67-80	2C	21.4	4.8	0.5	4.8	26.9	100	7.8	0.02	11.0	8.0	4.03

See footnotes at end of table

Table 31.--Chemical Analyses of Selected Soils--Continued

(Analyses by USDA-NRCS National Soil Survey Laboratory, Lincoln, Nebraska. TR indicates a trace amount. Dashes indicate that analyses were not made)

Soil name and sample number	Depth	Horizon	Extractable bases				Cation Exchange Capacity	Base satura-tion	pH 1:1 (soil: water)	Organic carbon	Exchange-able sodium (ESP)	Sodium adsorption ratio (SAR)	Electrical Conductivity (EC)
			Ca	Mg	K	Na							
	In		---Meq/100g---					Pct	pH	Pct	Pct		mmhos/cm
Griter: (1,3)													
(S93TX-177-008)	0-7	A	4.0	1.6	0.7	0.2	7.8	83.0	5.6	0.91	3.0	---	---
	7-16	Bt1	13.8	7.2	0.6	2.3	26.2	91.0	6.6	0.78	9.0	---	---
	16-27	Bt2	12.7	6.6	0.4	3.9	22.4	100	6.9	0.58	15.0	10.0	1.25
	27-37	Bt3	10.1	5.9	0.4	5.4	18.0	100	7.3	0.15	20.0	16.0	4.47
	37-51	BCt1	10.5	6.3	0.3	6.4	19.4	100	7.2	0.08	20.0	17.0	6.28
	51-56	BCt2	15.1	5.1	0.3	5.5	17.0	100	7.2	0.07	18.0	13.0	7.95
	56-80	C	10.0	4.3	0.3	4.7	14.7	100	6.9	0.03	17.0	12.0	7.27
Waelder: (1,3)													
(S93TX-177-004)	0-6	A1	10.6	2.9	0.7	0.1	15.8	91.0	5.5	1.91	---	---	---
	6-16	A2	8.9	2.2	0.5	0.2	12.7	93.0	5.8	0.78	---	---	---
	16-31	Bw1	5.1	1.3	0.2	0.1	6.8	99.0	6.5	0.18	---	---	---
	31-37	Bw2	6.2	1.6	0.1	0.2	8.4	96.0	6.4	0.18	---	---	---
	37-43	Bw3	4.1	1.3	0.2	0.1	5.8	97.0	6.1	0.10	---	---	---
	43-51	Bw4	5.1	1.6	0.1	TR	7.3	95.0	6.2	0.11	---	---	---
	51-67	Ab1	2.3	0.6	0.2	0.1	3.1	100	6.2	0.08	---	---	---
	67-78	Ab2	2.1	0.3	0.1	---	2.7	100	6.1	0.09	---	---	---
	78-80	Bwb	9.1	3.1	0.4	0.2	13.8	93.0	6.1	0.21	---	---	---

(1) Location of pedon sample is the same as the pedon given as typical for series in "Soil Series and Their Morphology."

(2) Location of the sampled pedon of Cost soil: from the intersection of U.S. Highway 87 and Farm Road 1116 about 4 miles southeast of Smiley; 6.6 miles north on Farm Road 1116, 0.2 mile west and 1000 feet in rangeland.

(3) Multiply organic carbon by 1.72 to obtain percent organic matter.

Table 32.--Taxonomic Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Alum	Clayey, mixed, active, thermic Arenic Paleustalfs
Arenosa	Thermic, uncoated Ustic Quartzipsamments
Arol	Fine, smectitic, thermic Udic Paleustalfs
Axtell	Fine, smectitic, thermic Udertic Paleustalfs
Benchley	Fine, smectitic, thermic Udertic Argiustolls
Bosque	Fine-loamy, mixed, superactive, thermic Cumulic Haplustolls
Branyon	Fine, smectitic, thermic Udic Haplusterts
Bryde	Fine, smectitic, hyperthermic Vertic Paleustalfs
Buchel	Fine, smectitic, hyperthermic Typic Haplusterts
Burlewash	Fine, smectitic, thermic Ultic Paleustalfs
Cadell	Fine, smectitic, thermic Aquertic Paleustalfs
Carbengle	Fine-loamy, carbonatic, thermic Udic Calciustolls
Chazos	Fine, smectitic, thermic Udic Paleustalfs
Conquista	Fine-loamy, mixed, superactive, hyperthermic Entic Haplustolls
Cost	Clayey over sandy or sandy-skeletal, smectitic, hyperthermic Typic Natraqualfs
Coy	Fine, smectitic, hyperthermic Vertic Argiustolls
Crockett	Fine, smectitic, thermic Udertic Paleustalfs
Cuero	Fine-loamy, mixed, superactive, thermic Pachic Argiustolls
Degola	Fine-loamy, mixed, superactive, hyperthermic Cumulic Haplustolls
Denhawken	Fine, smectitic, hyperthermic Vertic Ustochrepts
Dimebox	Fine, smectitic, thermic Udic Haplusterts
Dreyer	Fine, smectitic, thermic Udic Calciusterts
Ecleto	Clayey, smectitic, hyperthermic, shallow Typic Argiustolls
Edge	Fine, mixed, active, thermic Udic Paleustalfs
Elmendorf	Fine, smectitic, hyperthermic Vertic Argiustolls
Eloso	Fine, smectitic, hyperthermic Vertic Haplustolls
Flatonia	Fine, smectitic, thermic Udertic Argiustolls
Frelsburg	Fine, smectitic, thermic Udic Calciusterts
Ganado	Fine, smectitic, hyperthermic Typic Hapluderts
Gholson	Fine-loamy, siliceous, active, thermic Udic Paleustalfs
Gillett	Fine, smectitic, hyperthermic Typic Paleustalfs
Greenvine	Fine, smectitic, thermic Leptic Udic Haplusterts
Griter	Fine, mixed, superactive, hyperthermic Typic Paleustalfs
Imogene	Fine-loamy, mixed, superactive, hyperthermic Mollic Natrustalfs
Jedd	Fine, mixed, semiactive, thermic Ultic Paleustalfs
Kurten	Fine, smectitic, thermic Udertic Paleustalfs
Leming	Clayey, mixed, active, hyperthermic Arenic Paleustalfs
Luckenbach	Fine, mixed, superactive, thermic Typic Argiustolls
Luling	Fine, smectitic, thermic Udic Haplusterts
Mabank	Fine, smectitic, thermic Oxyaquic Vertic Paleustalfs
Meguin	Fine-silty, mixed, superactive, hyperthermic Fluventic Haplustolls
Monteola	Fine, smectitic, hyperthermic Typic Haplusterts
*Navasota	Fine, smectitic, thermic Aeric Endoaquerts
Normangee	Fine, smectitic, thermic Udertic Haplustalfs
Nusil	Loamy, siliceous, active, hyperthermic Arenic Paleustalfs
Padina	Loamy, siliceous, active, thermic Grossarenic Paleustalfs
Papalote	Fine, smectitic, hyperthermic Typic Paleustalfs
Pavelek	Clayey, smectitic, hyperthermic, shallow Petrocalcic Calciustolls
Rhymes	Loamy, siliceous, active, hyperthermic Grossarenic Paleustalfs
Rosanky	Fine, mixed, semiactive, thermic Ultic Paleustalfs
Rosenbrock	Fine, smectitic, hyperthermic Typic Haplusterts
Rutersville	Fine-loamy, mixed, active, thermic Aquic Paleustalfs
Sarnosa	Coarse-loamy, mixed, superactive, hyperthermic Typic Calciustolls
Schattel	Fine, smectitic, hyperthermic Vertic Ustochrepts
Shalba	Clayey, smectitic, thermic, shallow Udic Haplustalfs
Shiner	Loamy, carbonatic, hyperthermic, shallow Calcic Udic Ustochrepts
Shiro	Fine, mixed, active, thermic Udic Paleustalfs
Silstid	Loamy, siliceous, semiactive, thermic Arenic Paleustalfs

Table 32.--Taxonomic Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Silvern	Loamy-skeletal, siliceous, active, thermic Grossarenic Paleustalfs
Singleton	Fine, smectitic, thermic Udic Paleustalfs
Styx	Loamy, siliceous, active, thermic Arenic Paleustalfs
Sunev	Fine-loamy, carbonatic, thermic Udic Calciustolls
Tabor	Fine, smectitic, thermic Oxyaquic Vertic Paleustalfs
Tinn	Fine, smectitic, thermic Typic Hapluderts
Tordia	Fine, smectitic, hyperthermic Typic Haplusterts
Tremona	Clayey, mixed, active, thermic Aquic Arenic Paleustalfs
Waelder	Coarse-loamy, siliceous, superactive, thermic Udifluventic Ustochrepts
Weesatche	Fine-loamy, mixed, superactive, hyperthermic Typic Argiustolls
Wilson	Fine, smectitic, thermic Oxyaquic Vertic Haplustalfs
Zack	Fine, smectitic, thermic Udertic Paleustalfs
Zulch	Fine, smectitic, thermic Udertic Paleustalfs

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