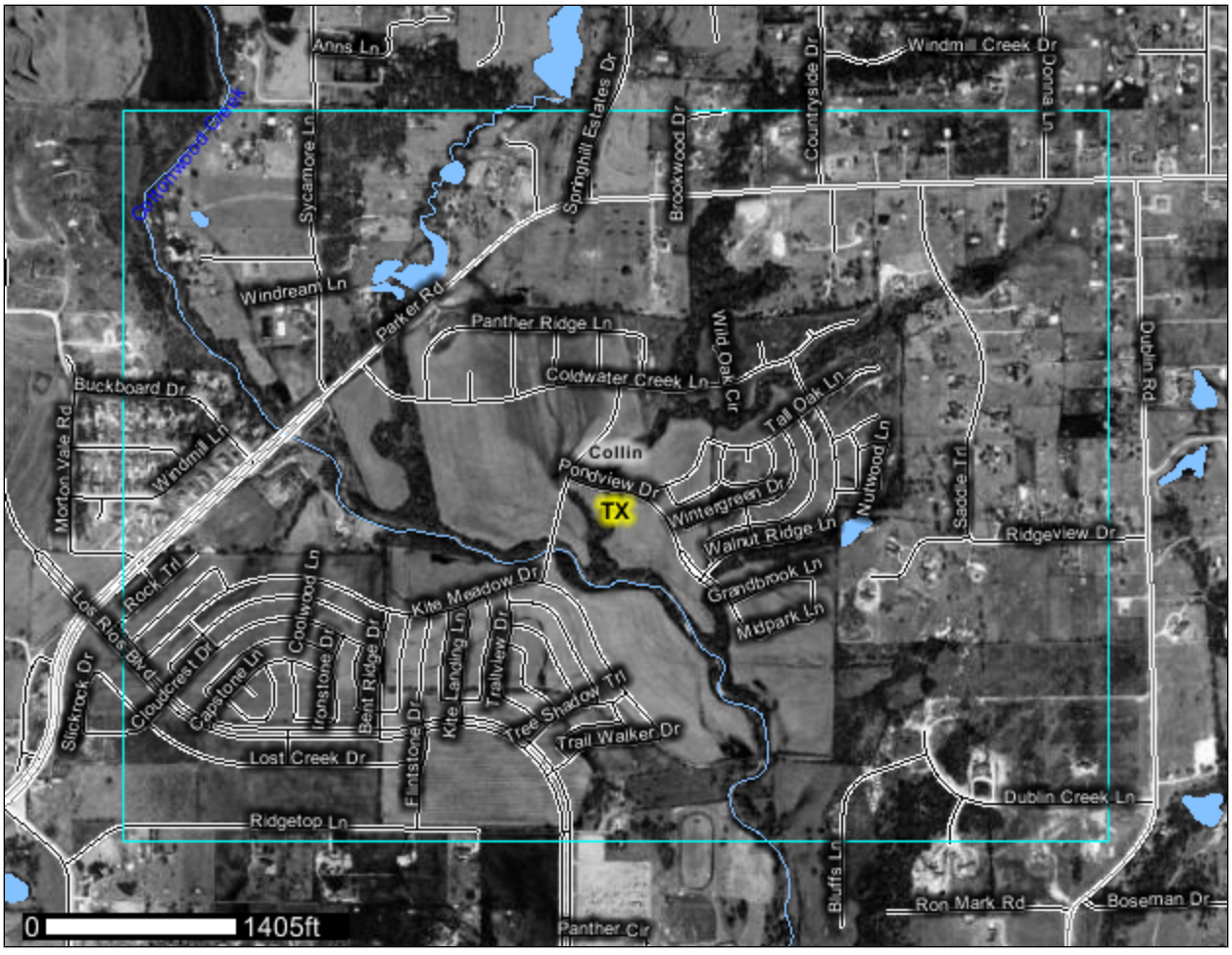
United States Department of Agriculture

Natural Resources Conservation Service

A product 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 participants

Custom Soil Resource Report for Collin County, Texas



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is 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.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

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.

The National Cooperative Soil Survey is 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 (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various 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 observed and described many soil profiles. A soil profile 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 or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur 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.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

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.

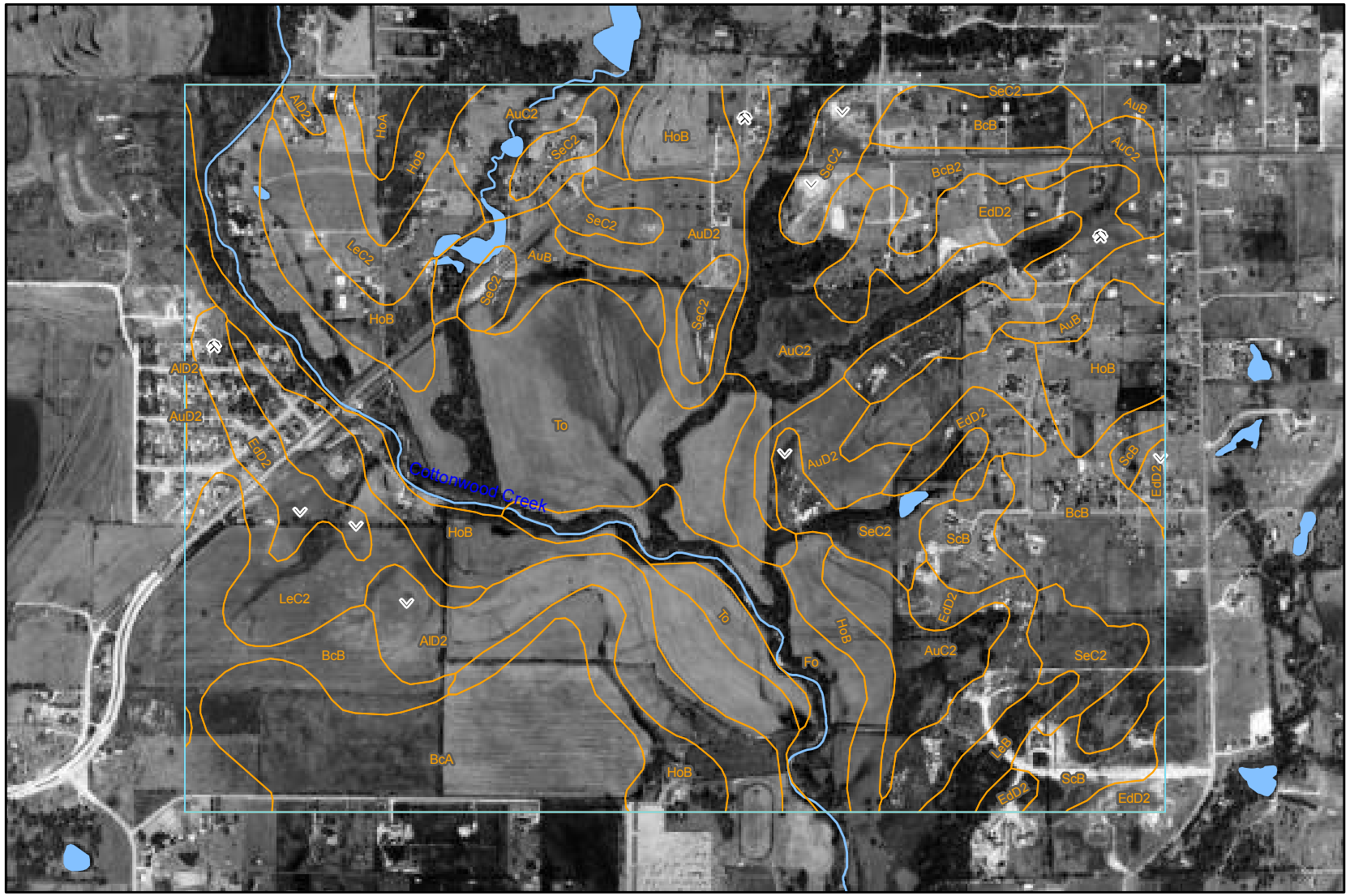
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in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

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

96° 39' 42"
96° 37' 48"
33° 3' 32"
33° 3' 30"
33° 2' 28"
33° 2' 26"
96° 39' 43"
96° 37' 49"



Map Scale: 1:14,100 if printed on A size (8.5" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1,000 2,000 3,000

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:14,100 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Collin County, Texas
Survey Area Data: Version 5, Jan 2, 2007

Date(s) aerial images were photographed: 1995

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Collin County, Texas (TX085)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AlD2	Altoga silty clay, 5 to 8 percent slopes, eroded	36.6	4.2%
AuB	Austin silty clay, 1 to 3 percent slopes	26.3	3.0%
AuC2	Austin silty clay, 3 to 5 percent slopes, eroded	92.3	10.6%
AuD2	Austin silty clay, 5 to 8 percent slopes, eroded	37.0	4.3%
BcA	Burleson clay, 0 to 1 percent slopes	65.1	7.5%
BcB	Burleson clay, 1 to 3 percent slopes	93.1	10.7%
BcB2	Leson clay, 2 to 4 percent slopes, eroded	11.5	1.3%
EdD2	Eddy gravelly clay loam, 3 to 8 percent slopes, eroded	89.1	10.3%
Fo	Frio clay loam, occasionally flooded	28.7	3.3%
HoA	Houston Black clay, 0 to 1 percent slopes	4.6	0.5%
HoB	Houston Black clay, 1 to 3 percent slopes	127.6	14.7%
LeB	Lewisville silty clay, 1 to 3 percent slopes	7.8	0.9%
LeC2	Lewisville silty clay, 3 to 5 percent slopes, eroded	60.9	7.0%
ScB	Stephen silty clay, 1 to 3 percent slopes	22.3	2.6%
SeC2	Stephen-Eddy complex, 3 to 5 percent slopes, eroded	58.8	6.8%
To	Trinity clay, occasionally flooded	106.5	12.3%
Totals for Area of Interest		**868.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

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. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. 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 important soil properties and qualities.

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, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha 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. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Collin County, Texas

AlD2—Altoga silty clay, 5 to 8 percent slopes, eroded

Map Unit Setting

Elevation: 500 to 1,500 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 270 days

Map Unit Composition

Altoga, eroded, and similar soils: 100 percent

Description of Altoga, Eroded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey alluvium derived from mixed sources

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 75 percent
Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: CLAY LOAM PE 64+ (R086AY555TX)

Typical profile

0 to 7 inches: Silty clay
7 to 25 inches: Silty clay
25 to 80 inches: Silty clay

AuB—Austin silty clay, 1 to 3 percent slopes

Map Unit Setting

Elevation: 500 to 900 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 220 to 250 days

Map Unit Composition
Austin and similar soils: 100 percent

Description of Austin

Setting
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from chalk

Properties and qualities
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 70 percent
Available water capacity: Moderate (about 7.0 inches)

Interpretive groups
Land capability (nonirrigated): 3e
Ecological site: CLAY LOAM PE 64+ (R086AY555TX)

Typical profile
0 to 18 inches: Silty clay
18 to 39 inches: Silty clay
39 to 55 inches: Bedrock

AuC2—Austin silty clay, 3 to 5 percent slopes, eroded

Map Unit Setting
Elevation: 500 to 900 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 220 to 250 days

Map Unit Composition
Austin, eroded, and similar soils: 100 percent

Description of Austin, Eroded

Setting
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear

Across-slope shape: Convex
Parent material: Residuum weathered from chalk

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 70 percent
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Ecological site: CLAY LOAM PE 64+ (R086AY555TX)

Typical profile

0 to 16 inches: Silty clay
16 to 30 inches: Silty clay
30 to 50 inches: Bedrock

AuD2—Austin silty clay, 5 to 8 percent slopes, eroded

Map Unit Setting

Elevation: 500 to 900 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 220 to 250 days

Map Unit Composition

Austin, eroded, and similar soils: 100 percent

Description of Austin, Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from chalk

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 70 percent
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: CLAY LOAM PE 64+ (R086AY555TX)

Typical profile

0 to 12 inches: Silty clay
12 to 32 inches: Silty clay
32 to 40 inches: Bedrock

BcA—Burleson clay, 0 to 1 percent slopes

Map Unit Setting

Elevation: 300 to 800 feet
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 220 to 270 days

Map Unit Composition

Burleson and similar soils: 100 percent

Description of Burleson

Setting

Landform: Stream terraces, stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Circular gilgai, circular gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium of pleistocene age derived from mixed sources

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Moderate (about 9.0 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: BLACKLAND PE 64+ (R086AY553TX)

Typical profile
0 to 6 inches: Clay
6 to 33 inches: Clay
33 to 80 inches: Clay

BcB—Burleson clay, 1 to 3 percent slopes

Map Unit Setting
Elevation: 300 to 800 feet
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 220 to 270 days

Map Unit Composition
Burleson and similar soils: 100 percent

Description of Burleson

Setting
Landform: Stream terraces, stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Circular gilgai, circular gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey alluvium of pleistocene age derived from mixed sources

Properties and qualities
Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Moderate (about 9.0 inches)

Interpretive groups
Land capability (nonirrigated): 2e
Ecological site: BLACKLAND PE 64+ (R086AY553TX)

Typical profile
0 to 6 inches: Clay
6 to 33 inches: Clay
33 to 80 inches: Clay

BcB2—Leson clay, 2 to 4 percent slopes, eroded

Map Unit Setting

Elevation: 350 to 750 feet
Mean annual precipitation: 34 to 44 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 260 days

Map Unit Composition

Leson and similar soils: 100 percent

Description of Leson

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Land capability (nonirrigated): 3e
Ecological site: BLACKLAND PE 64+ (R086AY553TX)

Typical profile

0 to 6 inches: Clay
6 to 24 inches: Clay
24 to 40 inches: Clay
40 to 80 inches: Clay

EdD2—Eddy gravelly clay loam, 3 to 8 percent slopes, eroded

Map Unit Setting

Elevation: 400 to 1,000 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 250 days

Map Unit Composition

Eddy and similar soils: 100 percent

Description of Eddy

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Residuum weathered from austin chalk

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 3 to 15 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 80 percent
Available water capacity: Very low (about 0.6 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: CHALKY RIDGE PE 64+ (R086AY554TX)

Typical profile

0 to 4 inches: Gravelly clay loam
4 to 6 inches: Very gravelly clay loam
6 to 40 inches: Bedrock

Fo—Frio clay loam, occasionally flooded

Map Unit Setting

Elevation: 400 to 1,700 feet
Mean annual precipitation: 25 to 36 inches

Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 220 to 260 days

Map Unit Composition
Frio and similar soils: 100 percent

Description of Frio

Setting
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium of holocene age derived from mixed sources

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: High (about 10.2 inches)

Interpretive groups
Land capability (nonirrigated): 2w
Ecological site: LOAMY BOTTOMLAND PE 44-64 (R086AY203TX)

Typical profile
0 to 20 inches: Clay loam
20 to 80 inches: Clay loam

HoA—Houston Black clay, 0 to 1 percent slopes

Map Unit Setting
Elevation: 400 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 220 to 250 days

Map Unit Composition
Houston black and similar soils: 100 percent

Description of Houston Black

Setting
Landform: Plains
Microfeatures of landform position: Circular gilgai
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex

Parent material: Residuum weathered from calcareous shale of taylor marl and eagleford shale

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: BLACKLAND PE 64+ (R086AY553TX)

Typical profile

0 to 6 inches: Clay
6 to 44 inches: Clay
44 to 80 inches: Clay

HoB—Houston Black clay, 1 to 3 percent slopes

Map Unit Setting

Elevation: 400 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 220 to 250 days

Map Unit Composition

Houston black and similar soils: 100 percent

Description of Houston Black

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Circular gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale of taylor marl and eagleford shale

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Land capability (nonirrigated): 2e
Ecological site: BLACKLAND PE 64+ (R086AY553TX)

Typical profile

0 to 6 inches: Clay
6 to 44 inches: Clay
44 to 80 inches: Clay

LeB—Lewisville silty clay, 1 to 3 percent slopes

Map Unit Setting

Elevation: 400 to 1,400 feet
Mean annual precipitation: 30 to 35 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 240 days

Map Unit Composition

Lewisville and similar soils: 100 percent

Description of Lewisville

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium of quaternary age derived from mixed sources

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: High (about 9.9 inches)

Interpretive groups

Land capability (nonirrigated): 2e

Ecological site: CLAY LOAM PE 64+ (R086AY555TX)

Typical profile

0 to 16 inches: Silty clay
16 to 34 inches: Silty clay
34 to 80 inches: Silty clay

LeC2—Lewisville silty clay, 3 to 5 percent slopes, eroded

Map Unit Setting

Elevation: 400 to 1,400 feet
Mean annual precipitation: 30 to 35 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 240 days

Map Unit Composition

Lewisville, eroded, and similar soils: 100 percent

Description of Lewisville, Eroded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium of quaternary age derived from mixed sources

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability (nonirrigated): 3e
Ecological site: CLAY LOAM PE 64+ (R086AY555TX)

Typical profile

0 to 11 inches: Silty clay
11 to 34 inches: Silty clay
34 to 80 inches: Silty clay

ScB—Stephen silty clay, 1 to 3 percent slopes

Map Unit Setting

Elevation: 400 to 1,000 feet
Mean annual precipitation: 30 to 42 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 250 days

Map Unit Composition

Stephen and similar soils: 100 percent

Description of Stephen

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from austin chalk formation

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 7 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Very low (about 1.8 inches)

Interpretive groups

Land capability (nonirrigated): 3e
Ecological site: CHALKY RIDGE PE 64+ (R086AY554TX)

Typical profile

0 to 14 inches: Silty clay
14 to 20 inches: Bedrock
20 to 28 inches: Bedrock

SeC2—Stephen-Eddy complex, 3 to 5 percent slopes, eroded

Map Unit Setting

Elevation: 400 to 1,000 feet
Mean annual precipitation: 30 to 42 inches

Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 250 days

Map Unit Composition

Stephen and similar soils: 70 percent
Eddy and similar soils: 25 percent
Minor components: 5 percent

Description of Stephen

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from austin chalk formation

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 7 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Very low (about 1.5 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Ecological site: CHALKY RIDGE PE 64+ (R086AY554TX)

Typical profile

0 to 12 inches: Silty clay
12 to 16 inches: Bedrock
16 to 20 inches: Bedrock

Description of Eddy

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from austin chalk

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 3 to 15 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 80 percent
Available water capacity: Very low (about 0.7 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: CHALKY RIDGE PE 64+ (R086AY554TX)

Typical profile

0 to 4 inches: Gravelly clay loam
4 to 8 inches: Very gravelly clay loam
8 to 20 inches: Bedrock

Minor Components

Unnamed, minor components

Percent of map unit: 5 percent

To—Trinity clay, occasionally flooded

Map Unit Setting

Elevation: 100 to 550 feet
Mean annual precipitation: 34 to 52 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 280 days

Map Unit Composition

Trinity and similar soils: 97 percent
Minor components: 3 percent

Description of Trinity

Setting

Landform: Flood plains
Microfeatures of landform position: Circular gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium of holocene age derived from mixed sources

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: CLAYEY BOTTOMLAND PE 44-64 (R086AY198TX)

Typical profile

0 to 5 inches: Clay
5 to 80 inches: Clay

Minor Components

Unnamed, hydric minor components

Percent of map unit: 3 percent
Landform: Depressions

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Soil Taxonomy Classification

This rating presents the taxonomic classification based on Soil Taxonomy.

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). 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. This table shows the classification of the soils in the survey area. 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 Alfisols.

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 Udalfs (Ud, meaning humid, plus alfs, from Alfisols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (Hapl, meaning minimal horizonation, plus udalfs, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective Typic identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size 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-loamy, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

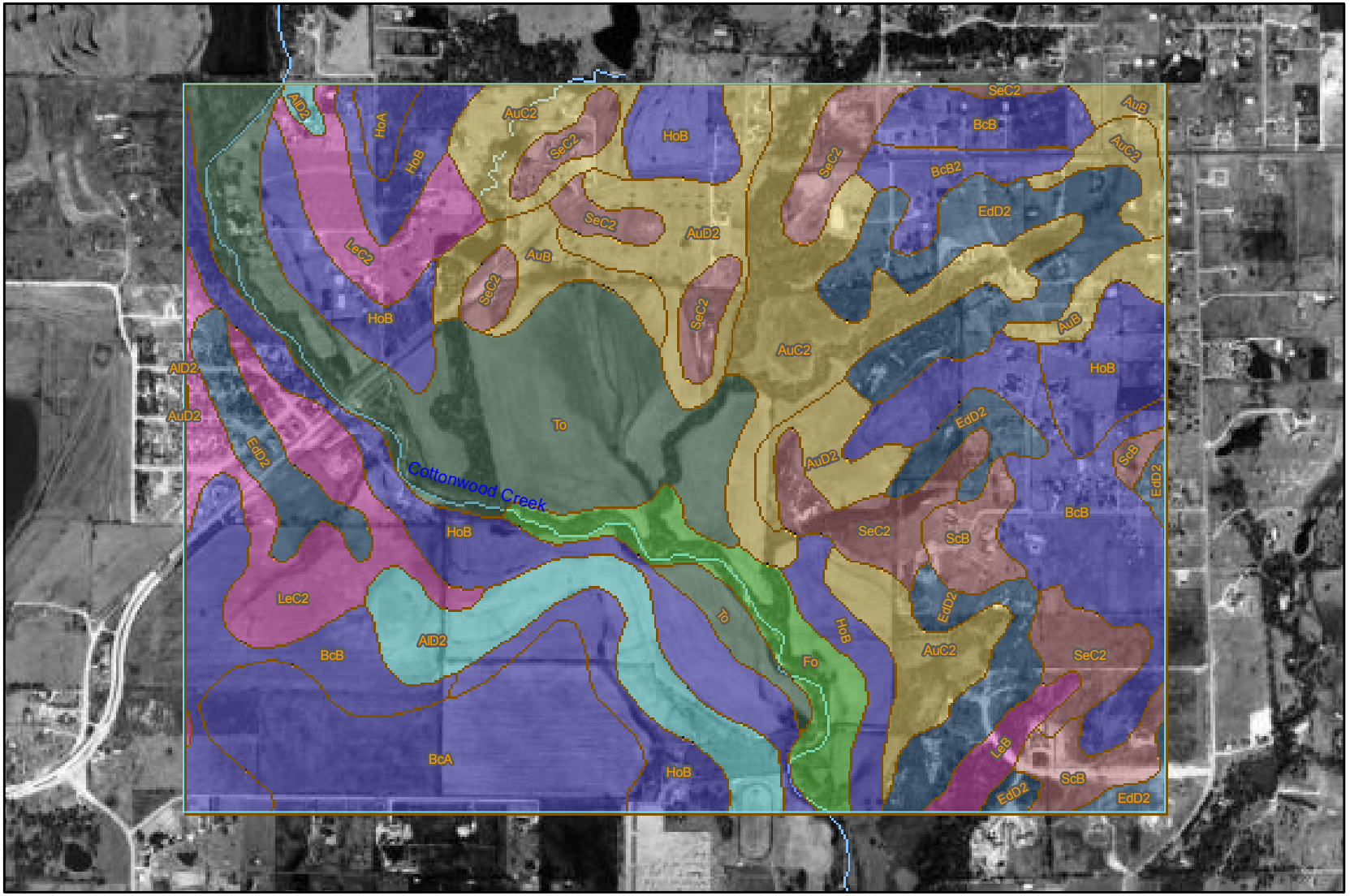
References:

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. (The soils in a given survey area may have been classified according to earlier editions of this publication.)

Custom Soil Resource Report
Map--Soil Taxonomy Classification

96° 39' 42"
96° 37' 48"
33° 3' 32"
33° 3' 30"



33° 2' 28"
33° 2' 26"

96° 39' 43"
96° 37' 49"

Map Scale: 1:14,100 if printed on A size (8.5" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1,000 2,000 3,000

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Clayey, mixed, thermic, shallow Udorthentic Haplustolls
- Fine, montmorillonitic, thermic Cumulic Haplustolls
- Fine, montmorillonitic, thermic Udic Haplusterts
- Fine-silty, carbonatic, thermic Udic Ustochrepts
- Fine-silty, carbonatic, thermic Udorthentic Haplustolls
- Fine-silty, mixed, thermic Udic Calciustolls
- Loamy-skeletal, carbonatic, thermic, shallow Typic Ustorthents
- Very-fine, montmorillonitic, thermic Typic Hapluderts
- Not rated or not available

Water Features

- Oceans
- Streams and Canals

MAP INFORMATION

Map Scale: 1:14,100 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Collin County, Texas
Survey Area Data: Version 5, Jan 2, 2007

Date(s) aerial images were photographed: 1995

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Soil Taxonomy Classification

Soil Taxonomy Classification— Summary by Map Unit — Collin County, Texas				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
AlD2	Altoga silty clay, 5 to 8 percent slopes, eroded	Fine-silty, carbonatic, thermic Udic Ustochrepts	36.6	4.2%
AuB	Austin silty clay, 1 to 3 percent slopes	Fine-silty, carbonatic, thermic Udorthentic Haplustolls	26.3	3.0%
AuC2	Austin silty clay, 3 to 5 percent slopes, eroded	Fine-silty, carbonatic, thermic Udorthentic Haplustolls	92.3	10.6%
AuD2	Austin silty clay, 5 to 8 percent slopes, eroded	Fine-silty, carbonatic, thermic Udorthentic Haplustolls	37.0	4.3%
BcA	Burleson clay, 0 to 1 percent slopes	Fine, montmorillonitic, thermic Udic Haplusterts	65.1	7.5%
BcB	Burleson clay, 1 to 3 percent slopes	Fine, montmorillonitic, thermic Udic Haplusterts	93.1	10.7%
BcB2	Leson clay, 2 to 4 percent slopes, eroded	Fine, montmorillonitic, thermic Udic Haplusterts	11.5	1.3%
EdD2	Eddy gravelly clay loam, 3 to 8 percent slopes, eroded	Loamy-skeletal, carbonatic, thermic, shallow Typic Ustorthents	89.1	10.3%
Fo	Frio clay loam, occasionally flooded	Fine, montmorillonitic, thermic Cumulic Haplustolls	28.7	3.3%
HoA	Houston Black clay, 0 to 1 percent slopes	Fine, montmorillonitic, thermic Udic Haplusterts	4.6	0.5%
HoB	Houston Black clay, 1 to 3 percent slopes	Fine, montmorillonitic, thermic Udic Haplusterts	127.6	14.7%
LeB	Lewisville silty clay, 1 to 3 percent slopes	Fine-silty, mixed, thermic Udic Calciustolls	7.8	0.9%
LeC2	Lewisville silty clay, 3 to 5 percent slopes, eroded	Fine-silty, mixed, thermic Udic Calciustolls	60.9	7.0%
ScB	Stephen silty clay, 1 to 3 percent slopes	Clayey, mixed, thermic, shallow Udorthentic Haplustolls	22.3	2.6%
SeC2	Stephen-Eddy complex, 3 to 5 percent slopes, eroded	Clayey, mixed, thermic, shallow Udorthentic Haplustolls	58.8	6.8%
To	Trinity clay, occasionally flooded	Very-fine, montmorillonitic, thermic Typic Hapluderts	106.5	12.3%
Totals for Area of Interest			**868.0**	**100.0%**

Rating Options—Soil Taxonomy Classification

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Wildlife Management

Wildlife Management interpretations are tools for evaluating the suitability of the soil for various components of wildlife habitat, and as habitat of different types or species of wildlife. Example interpretations include crawfish aquaculture, burrowing animals and reptiles, grasses and legumes for food and cover, and freshwater wetland plants.

Irr Domestic Grasses and Legumes for Food and Cover (TX)

Irrigated domestic grasses & legumes for food & cover (TX) interpretation provides a tool to assess a soil's limitations for use as either primary or secondary wildlife habitat. This interpretation is useful for planning the production of irrigated domestic grass and legumes for wildlife forage and cover. The ratings are for the soils in their natural condition and do not consider present land use, existing vegetation, water sources, and the presence or absence of wildlife in the area.

The interpretation ranks the soil as a medium for growing irrigated grasses and legumes for wildlife food and cover. The species selected are generally perennial and include some common annuals. They are self-perpetuating after the initial stand establishment and thus tend to minimize the long-term risk of soil erosion. If appropriate, the soils may receive supplemental fertilization and liming to increase vegetation growth rates for the production of vegetative food and cover. Depending upon the objectives of the user, the plant species selection and management techniques will dictate whether the habitat will be dominantly used for food, cover, or both. The height and structure of the vegetation species are important considerations in addressing wildlife cover relationships.

The interpretation provides ratings and identifies the dominant soil characteristics that limit the site for growing irrigated grass and/or legumes. This information allows the user to plan and develop alternative sites and irrigation system requirements and to select the grass, or legume species, or a combination of both species that best meets the wildlife habitat requirements.

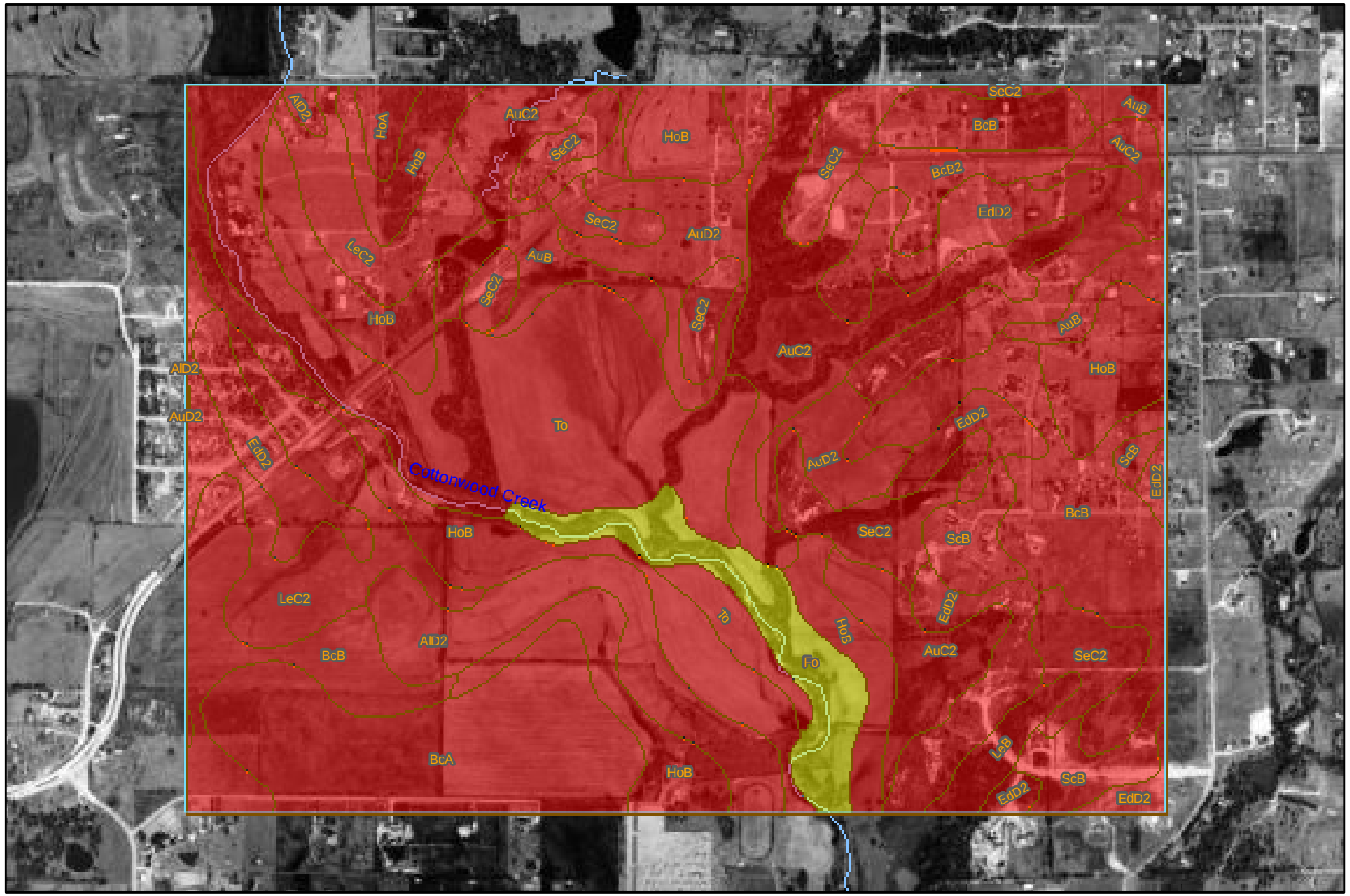
The interpretive ratings identify the dominant soil characteristic that limits the site for irrigated forage production. The soil properties and qualities important for irrigated grasses and legumes are surface texture, organic matter content, rock fragment, soil depth, available water holding capacity, wetness, ponding, flooding, saturated hudraulic conductiviey (Ksat), slope, salts, sodium adsorption ratio, and susceptibility to erosion.

Numerical ratings or values indicate the relative severity or degree of limitation for individual soil restrictive (limiting) features. Ratings are shown for limiting soil features 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). Non-limiting soil features with a numerical rating of zero are not listed.

Rating class terms indicate the extent to which the soils are limited by the soil features that affect the soil interpretation. Verbal soil rating classes are based on the highest numerical rating for the most limiting soil feature(s) considered in the rating process. The "not limited" class (numerical value for the most restrictive feature = 0) indicates that the soil has no limiting features for the specified use. The "somewhat limited" class (numerical value for the most restrictive feature .01 to .99) indicates that the soil has limiting features for the specified use that can be overcome with proper planning, design, installation, and management. The effort required to overcome a soil limitation increases as the numerical rating increases. The "very limited" class (numerical value for the most restrictive feature = 1.00) indicates that the soil has one or more very limiting features that can only be overcome with special planning, major soil modification, special design, or significant management practices.

Lesser soil restrictive features have a lower numerical value than the maximum used to rate the soil, and they are identified to provide the user with additional information about soil limitations for the specific use. Lesser soil restrictive features also need to be considered in planning, design, installation, and management.

Custom Soil Resource Report
Map--Irr Domestic Grasses and Legumes for Food and Cover (TX)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Very limited
- Somewhat limited
- Not limited
- not rated or not available

Water Features

- Oceans
- Streams and Canals

MAP INFORMATION

Map Scale: 1:14,100 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Collin County, Texas
Survey Area Data: Version 5, Jan 2, 2007

Date(s) aerial images were photographed: 1995

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—Irr Domestic Grasses and Legumes for Food and Cover (TX)

Irr Domestic Grasses and Legumes for Food and Cover (TX)— Summary by Map Unit — Collin County, Texas						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
AlD2	Altoga silty clay, 5 to 8 percent slopes, eroded	Very limited	Altoga, eroded (100%)	Potentially or highly erodible (1.00)	36.6	4.2%
				Slope (0.88)		
				Too clayey (0.50)		
AuB	Austin silty clay, 1 to 3 percent slopes	Very limited	Austin (100%)	Potentially or highly erodible (1.00)	26.3	3.0%
				Too clayey (0.50)		
				Bedrock (0.00)		
AuC2	Austin silty clay, 3 to 5 percent slopes, eroded	Very limited	Austin, eroded (100%)	Potentially or highly erodible (1.00)	92.3	10.6%
				Too clayey (0.50)		
				Bedrock (0.46)		
AuD2	Austin silty clay, 5 to 8 percent slopes, eroded	Very limited	Austin, eroded (100%)	Potentially or highly erodible (1.00)	37.0	4.3%
				Slope (0.88)		
				Too clayey (0.50)		
				Bedrock (0.29)		
BcA	Burleson clay, 0 to 1 percent slopes	Very limited	Burleson (100%)	Too clayey (1.00)	65.1	7.5%
				Percs slowly (0.50)		
BcB	Burleson clay, 1 to 3 percent slopes	Very limited	Burleson (100%)	Potentially or highly erodible (1.00)	93.1	10.7%
				Too clayey (1.00)		
				Percs slowly (0.50)		
BcB2	Leson clay, 2 to 4 percent slopes, eroded	Very limited	Leson (100%)	Potentially or highly erodible (1.00)	11.5	1.3%
				Too clayey (1.00)		
				Percs slowly (0.50)		
EdD2	Eddy gravelly clay loam, 3 to 8 percent slopes, eroded	Very limited	Eddy (100%)	Droughty (1.00)	89.1	10.3%
				Potentially or highly erodible (1.00)		
				Bedrock (1.00)		
				Too gravelly, cobbly, or stony (1.00)		
				Slope (0.50)		
Fo	Frio clay loam, occasionally flooded	Somewhat limited	Frio (100%)	Too clayey (0.99)	28.7	3.3%
				Flooding (0.50)		
HoA	Houston Black clay, 0 to 1 percent slopes	Very limited	Houston Black (100%)	Too clayey (1.00)	4.6	0.5%
				Percs slowly (0.50)		

Irr Domestic Grasses and Legumes for Food and Cover (TX)— Summary by Map Unit — Collin County, Texas						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
HoB	Houston Black clay, 1 to 3 percent slopes	Very limited	Houston Black (100%)	Potentially or highly erodible (1.00)	127.6	14.7%
				Too clayey (1.00)		
				Percs slowly (0.50)		
LeB	Lewisville silty clay, 1 to 3 percent slopes	Very limited	Lewisville (100%)	Potentially or highly erodible (1.00)	7.8	0.9%
				Too clayey (1.00)		
LeC2	Lewisville silty clay, 3 to 5 percent slopes, eroded	Very limited	Lewisville, eroded (100%)	Potentially or highly erodible (1.00)	60.9	7.0%
				Too clayey (1.00)		
ScB	Stephen silty clay, 1 to 3 percent slopes	Very limited	Stephen (100%)	Potentially or highly erodible (1.00)	22.3	2.6%
				Bedrock (1.00)		
				Too clayey (1.00)		
				Droughty (1.00)		
SeC2	Stephen-Eddy complex, 3 to 5 percent slopes, eroded	Very limited	Stephen (70%)	Droughty (1.00)	58.8	6.8%
				Potentially or highly erodible (1.00)		
				Bedrock (1.00)		
				Too clayey (1.00)		
			Eddy (25%)	Droughty (1.00)		
				Potentially or highly erodible (1.00)		
				Bedrock (1.00)		
				Too gravelly, cobbly, or stony (1.00)		
To	Trinity clay, occasionally flooded	Very limited	Trinity (97%)	Too clayey (1.00)	106.5	12.3%
				Flooding (0.50)		
				Percs slowly (0.50)		
Totals for Area of Interest					**868.0**	**100.0%**

Irr Domestic Grasses and Legumes for Food and Cover (TX)— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Very limited	839.4	96.7%
Somewhat limited	28.7	3.3%
Totals for Area of Interest	**868.0**	**100.0%**

Rating Options—Irr Domestic Grasses and Legumes for Food and Cover (TX)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://soils.usda.gov/

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://soils.usda.gov/

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://soils.usda.gov/

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.glti.nrcs.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://soils.usda.gov/

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.