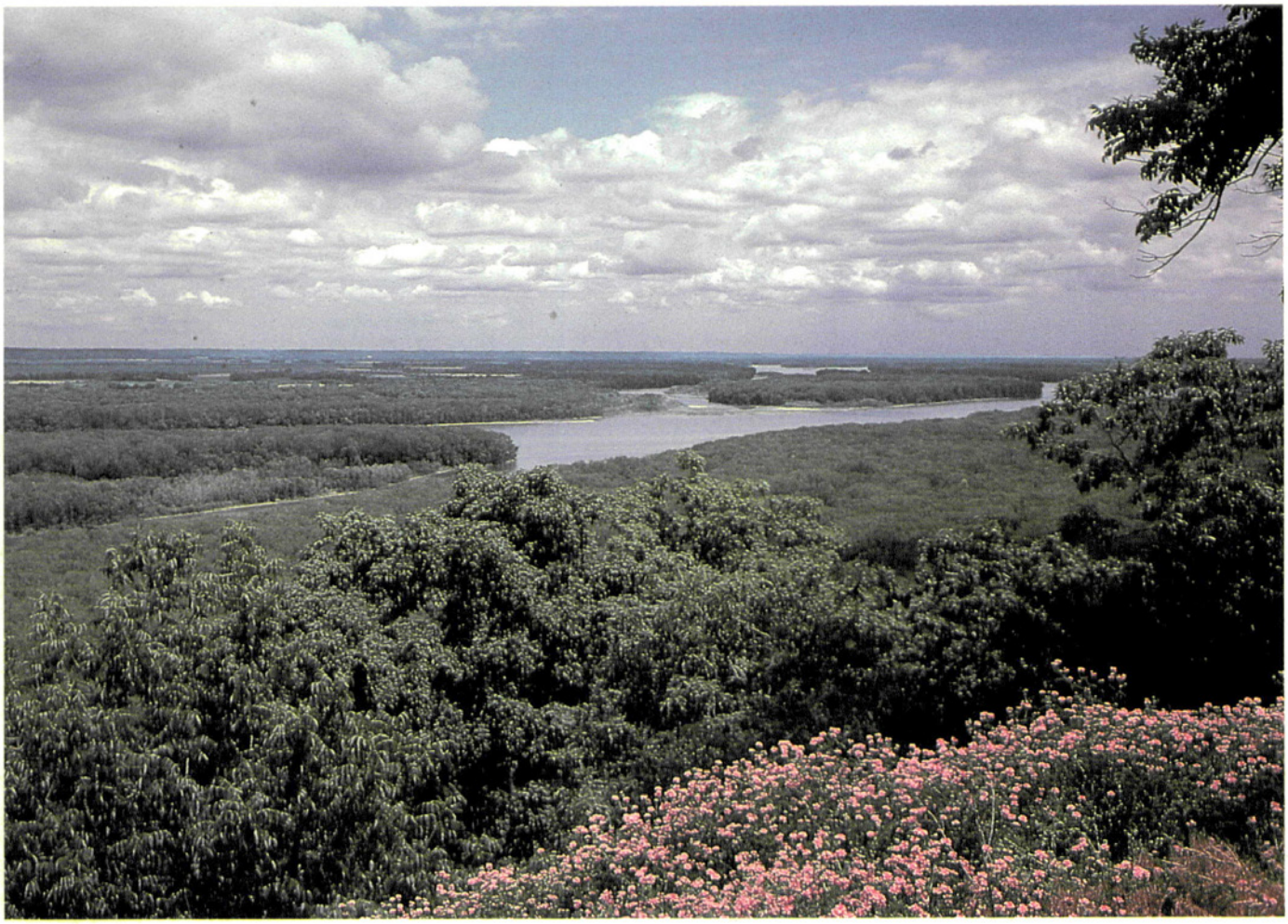
United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Illinois Agricultural
Experiment Station

Soil Survey of Pike County, Illinois



How to Use This Soil Survey

General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, 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.

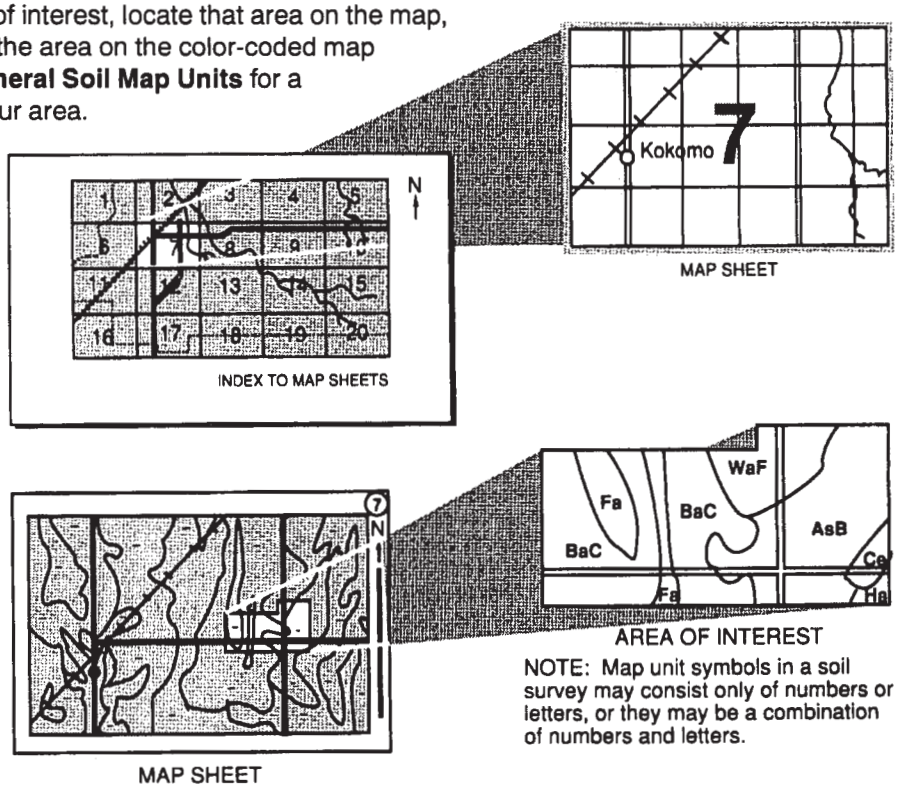
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

Detailed Soil Maps

The detailed soil maps follow the general soil map. These 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**, which precedes the soil maps. Note the number of the map sheet and turn to that sheet.

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



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

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 (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1990. Soil names and descriptions were approved in 1991. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1991. This survey was made cooperatively by the Natural Resources Conservation Service and the Illinois Agricultural Experiment Station. It is part of the technical assistance furnished to the Pike County Soil and Water Conservation District. The Illinois Department of Agriculture and the Pike County Board provided financial assistance for the survey.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

This soil survey is Illinois Agricultural Experiment Station Soil Report 155.

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Cover: Overlooking an area of the Wakeland-Elsah-Haymond association. The soils in this association are not protected from flooding.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov (click on "Technical Resources").

Contents

How to Use This Soil Survey 3
Foreword 9
General Nature of the County 11
How This Survey Was Made 13
Map Unit Composition 14
General Soil Map Units 15
1. Downs-Atterberry-Tama 15
2. Rozetta-Fayette-Downs 16
3. Hickory-El Dara-Gosport 16
4. Fayette-Seaton-Goss 18
5. Wakeland-Elsah-Haymond 19
6. Beaucoup-Coffeen-Titus 20
Broad Land Use Considerations 21
Detailed Soil Map Units 23
5C2—Blair silt loam, 5 to 10 percent slopes, eroded 23
5C3—Blair silty clay loam, 5 to 10 percent slopes, severely eroded 25
5D2—Blair silt loam, 10 to 15 percent slopes, eroded 26
5D3—Blair silty clay loam, 10 to 15 percent slopes, severely eroded 27
8D2—Hickory silt loam, 10 to 15 percent slopes, eroded 28
8D3—Hickory silty clay loam, 10 to 15 percent slopes, severely eroded 29
8E—Hickory loam, 15 to 30 percent slopes 31
8E2—Hickory silt loam, 15 to 30 percent slopes, eroded 32
8G—Hickory silt loam, 30 to 60 percent slopes 33
17A—Keomah silt loam, 0 to 2 percent slopes 34
17B—Keomah silt loam, 2 to 5 percent slopes .. 35
19B2—Sylvan silt loam, 2 to 5 percent slopes, eroded 36
19C2—Sylvan silt loam, 5 to 10 percent slopes, eroded 37
19C3—Sylvan silty clay loam, 5 to 10 percent slopes, severely eroded 39
19D3—Sylvan silty clay loam, 10 to 15 percent slopes, severely eroded 40
30F—Hamburg silt, 20 to 30 percent slopes 41
30G—Hamburg silt, 30 to 65 percent slopes..... 42
36B—Tama silt loam, 1 to 5 percent slopes 43
37B—Worthen silt loam, 1 to 4 percent slopes 44
43A—Ipava silt loam, 0 to 2 percent slopes 44
43B—Ipava silt loam, 2 to 5 percent slopes 45
46—Herrick silt loam 46
50—Virden silt loam 47
61—Atterberry silt loam 48
75B—Drury silt loam, 2 to 5 percent slopes 49
75C—Drury silt loam, 5 to 10 percent slopes ... 50
119D2—Elco silt loam, 10 to 15 percent slopes, eroded 51
119D3—Elco silty clay loam, 10 to 15 percent slopes, severely eroded 52
119E2—Elco silt loam, 15 to 25 percent slopes, eroded 53
242A—Kendall silt loam, 0 to 2 percent slopes 54
257A—Clarksdale silt loam, 0 to 2 percent slopes 55
257B—Clarksdale silt loam, 2 to 5 percent slopes 56
264D3—El Dara sandy loam, 10 to 15 percent slopes, severely eroded 57
264E—El Dara fine sandy loam, 15 to 30 percent slopes 58
264E2—El Dara fine sandy loam, 15 to 30 percent slopes, eroded 59
264G—El Dara fine sandy loam, 30 to 50 percent slopes 61
271C3—Timula silt loam, 5 to 10 percent slopes, severely eroded 62
271D3—Timula silt loam, 10 to 15 percent slopes, severely eroded 63
271E2—Timula silt loam, 15 to 30 percent slopes, eroded 64
274B—Seaton silt loam, 2 to 5 percent slopes 65
274C2—Seaton silt loam, 5 to 10 percent slopes, eroded 66
274C3—Seaton silt loam, 5 to 10 percent slopes, severely eroded 67
274D2—Seaton silt loam, 10 to 15 percent slopes, eroded 68
274D3—Seaton silt loam, 10 to 15 percent slopes, severely eroded 69

274E—Seaton silt loam, 15 to 30 percent slopes 70
274E2—Seaton silt loam, 15 to 30 percent slopes, eroded 71
274G—Seaton silt loam, 30 to 50 percent slopes 72
278A—Stronghurst silt loam, 0 to 2 percent slopes 73
278B—Stronghurst silt loam, 2 to 5 percent slopes 74
279B—Rozetta silt loam, 2 to 5 percent slopes 75
279C2—Rozetta silt loam, 5 to 10 percent slopes, eroded 76
279C3—Rozetta silty clay loam, 5 to 10 percent slopes, severely eroded 77
280B—Fayette silt loam, 2 to 5 percent slopes 78
280C2—Fayette silt loam, 5 to 10 percent slopes, eroded 79
280C3—Fayette silty clay loam, 5 to 10 percent slopes, severely eroded 80
280D2—Fayette silt loam, 10 to 15 percent slopes, eroded 81
280D3—Fayette silty clay loam, 10 to 15 percent slopes, severely eroded 83
280E2—Fayette silt loam, 15 to 30 percent slopes, eroded 84
386B—Downs silt loam, 2 to 5 percent slopes 85
386C2—Downs silt loam, 5 to 10 percent slopes, eroded 86
403G—Elizabeth very channery silt loam, 30 to 60 percent slopes 87
430B—Raddle silt loam, 1 to 5 percent slopes 88
472D2—Baylis silt loam, 10 to 15 percent slopes, eroded 89
472E2—Baylis silt loam, 15 to 30 percent slopes, eroded 90
551E2—Gosport silt loam, 15 to 30 percent slopes, eroded 91
551G—Gosport silt loam, 30 to 60 percent slopes 92
605D2—Ursa silt loam, 10 to 15 percent slopes, eroded 93
605D3—Ursa silty clay loam, 10 to 15 percent slopes, severely eroded 95
605E2—Ursa silt loam, 15 to 20 percent slopes, eroded 96
606E—Goss gravelly silt loam, 15 to 30 percent slopes 97
606G—Goss gravelly silt loam, 30 to 60 percent slopes 98
785G—Lacrescent channery silt loam, 30 to 70 percent slopes 99
815—Udorthents, silty 100
864—Pits, quarries 101
865—Pits, gravel 101
937E—Seaton-Hickory complex, 15 to 30 percent slopes 101
3028—Jules silt loam, frequently flooded 103
3070—Beaucoup silt loam, frequently flooded 104
3070L—Beaucoup silt loam, frequently flooded, long duration 105
3071L—Darwin silty clay loam, frequently flooded, long duration 105
3092—Sarpy loamy sand, frequently flooded 106
3092L—Sarpy loamy sand, frequently flooded, long duration 107
3302—Ambraw silty clay loam, sandy substratum, frequently flooded 108
3302L—Ambraw silty clay loam, frequently flooded, long duration 109
3331—Haymond silt loam, frequently flooded 110
3331L—Haymond silt loam, frequently flooded, long duration 111
3333—Wakeland silt loam, frequently flooded 112
3333L—Wakeland silt loam, frequently flooded, long duration 112
3404—Titus silty clay loam, frequently flooded 113
3404L—Titus silty clay loam, frequently flooded, long duration 114

3415—Orion silt loam, frequently flooded 115
3415L—Orion silt loam, frequently flooded, long duration 116
3428—Coffeen silt loam, frequently flooded 117
3428L—Coffeen silt loam, frequently flooded, long duration 118
3475—Elsah gravelly loam, frequently flooded 118
3475L—Elsah gravelly loam, frequently flooded, long duration 119
4070—Beaucoup silty clay loam, ponded 120
7088—Sparta loamy fine sand, rarely flooded 121
8070—Beaucoup silty clay loam, occasionally flooded 122
8071—Darwin silty clay loam, occasionally flooded 123
8092—Sarpy loamy fine sand, occasionally flooded 124
8180—Dupo silt loam, occasionally flooded 125
8183—Shaffton silty clay loam, occasionally flooded 125
8217—Twomile silt loam, occasionally flooded 126
8284—Tice silt loam, occasionally flooded 127
8288—Petrolia silt loam, occasionally flooded 128
8302—Ambraw loam, occasionally flooded 129
8331—Haymond silt loam, occasionally flooded 129
8333—Wakeland silt loam, occasionally flooded 130
8341—Ambraw silt loam, sandy substratum, occasionally flooded 131
8395—Ceresco loam, occasionally flooded 132
8396—Vesser silt loam, occasionally flooded 132
8404—Titus silty clay, occasionally flooded 133
8415—Orion silt loam, occasionally flooded ... 134
8428—Coffeen silt loam, occasionally flooded 135
8451—Lawson silt loam, occasionally flooded 136
8452—Riley silty clay loam, occasionally flooded 136
8789—Ambraw-Ceresco-Sarpy complex, occasionally flooded 137
Prime Farmland 139
Use and Management of the Soils 141
Crops and Pasture 141
Woodland Management and Productivity 145
Windbreaks and Environmental Plantings 147
Recreation 147
Wildlife Habitat 148
Engineering 150
Building Site Development 150
Sanitary Facilities 151
Construction Materials 152
Water Management 153
Soil Properties 155
Engineering Index Properties 155
Physical and Chemical Properties 156
Soil and Water Features 157
Classification of the Soils 161
Soil Series and Their Morphology 161
Ambraw Series 162
Atterberry Series 162
Baylis Series 163
Beaucoup Series 164
Blair Series 164
Ceresco Series 165
Clarksdale Series 166
Coffeen Series 166
Darwin Series 167
Downs Series 168
Drury Series 169
Dupo Series 169
Elco Series 170
El Dara Series 170
Elizabeth Series 171
Elsah Series 171
Fayette Series 172
Gosport Series 172
Goss Series 173
Hamburg Series 174
Haymond Series 174
Herrick Series 175
Hickory Series 175
Ipava Series 176
Jules Series 177

Kendall Series 177
Keomah Series 178
Lacrescent Series 179
Lawson Series 179
Orion Series 180
Petrolia Series 180
Raddle Series 181
Riley Series 181
Rozetta Series 182
Sarpy Series 183
Seaton Series 183
Shaffton Series 184
Sparta Series 184
Stronghurst Series 185
Sylvan Series 185
Tama Series 186
Tice Series 187
Timula Series 187
Titus Series 188
Twomile Series 188
Ursa Series 189
Vesser Series 190
Virden Series 190
Wakeland Series 191
Worthen Series 192
Formation of the Soils 193
Parent Material 193
Climate 195
Plant and Animal Life 195
Topography 195
Time 196
References 197
Glossary 199
Tables 209
Table 1.—Temperature and Precipitation 210
Table 2.—Freeze Dates in Spring and Fall 211
Table 3.—Growing Season 211
Table 4.—Acreage and Proportionate Extent of the Soils 212
Table 5.—Prime Farmland 214
Table 6.—Land Capability and Yields per Acre of Crops and Pasture 215
Table 7.—Woodland Management and Productivity 221
Table 8.—Windbreaks and Environmental Plantings 227
Table 9.—Recreational Development 236
Table 10.—Wildlife Habitat 242
Table 11.—Building Site Development 247
Table 12.—Sanitary Facilities 254
Table 13.—Construction Materials 261
Table 14.—Water Management 266
Table 15.—Engineering Index Properties 273
Table 16.—Physical and Chemical Properties of the Soils 290
Table 17.—Water Features 297
Table 18.—Soil Features 301
Table 19.—Classification of the Soils 305

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Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it 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 survey 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 survey 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 that affect 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 shallow to bedrock. 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. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of
Pike County, Illinois

By Gary R. Struben and Michael E. Lilly, Natural Resources Conservation Service

Fieldwork by Michael E. Lilly, Daniel G. Mueller, and Gary R. Struben, Natural Resources Conservation Service, and Charles M. Harwood, Jane L. Johnson, and Martha E. Sheppard, Pike County Board

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the Illinois Agricultural Experiment Station

PIKE COUNTY is in west-central Illinois (fig. 1). It has an area of 543,955 acres, or about 850 square miles. It is bordered on the north by Adams and Brown Counties, on the south by Calhoun County, on the west by the Mississippi River, and on the east by the Illinois River. In 1980, the population of the county was 18,896 (U.S. Department of Commerce, 1983). Pittsfield is the county seat.

This survey updates the soil survey of Pike County published in 1915 (Hopkins and others, 1915). It provides additional information and has larger maps, which show the soils in greater detail.

General Nature of the County

This section provides general information about some of the natural and cultural factors that affect land use in the county. It describes climate; history and development; physiography, relief, and drainage; and agriculture, silviculture, and transportation facilities.

Climate

Pike County has a continental climate of relatively cold winters and warm, humid summers. Although precipitation is heaviest during the warmer half of the year, winter snow cover and frost usually provide adequate moisture to the soil in spring.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Griggsville in the period from 1951 to 1980. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 29.1 degrees F and the average daily minimum temperature is 20.2 degrees. The lowest temperature on record, which occurred at Griggsville on January 23, 1963, is -19 degrees. In summer, the average temperature is 72.1 degrees and the average daily maximum temperature is 86.0 degrees. The highest recorded temperature, which occurred at Griggsville on July 14, 1954, is 115 degrees F.

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 (40 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 total annual precipitation is 35.89 inches. Of this, 22.45 inches, or 62.5 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 10.85 inches. The heaviest 1-day rainfall during the period of record was 5.02 inches at Griggsville on September 16, 1965. Thunderstorms occur on about 50 days each year.

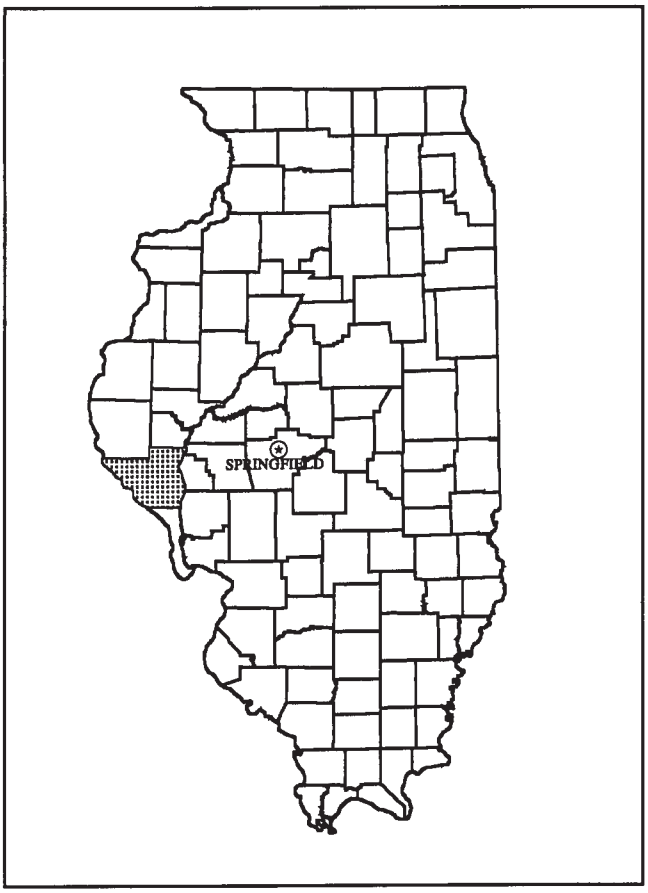

Figure 1.—Location of Pike County in Illinois.

The average seasonal snowfall is 24.6 inches. The greatest snow depth at any one time during the period of record was 20 inches. On the average, 33 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 64 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 70 percent of the time possible in summer and 47 percent in winter. The prevailing wind is from the south-southwest. Average windspeed is highest, 13.8 miles per hour, in March.

History and Development

As part of the lower Illinois River Valley, Pike County was an important hunting and settlement area for Native Americans. Archaeologists continue to investigate the extent of Native American land use in Pike County.

Pike County was organized in 1821 as part of the Military Tract. It originally included the area that is now Chicago and Peoria. The county was assigned its final form in 1825. It is named for General Zebulon Pike.

Ebenezer Franklin pitched a tent near Atlas in March 1820 and thus is considered the first European settler in the area. Many of the existing towns were established during a period of accelerated settlement beginning in 1830. Early settlement was dominated by river travel. The county population grew from approximately 3,400 in 1830 to 33,000 in the 1880's (Chapman and others, 1880). In line with general trends in the country, the population in this mostly rural area has declined in comparison with urban and suburban areas.

Physiography, Relief, and Drainage

Physiography and relief in the survey area are varied. The eastern and western sides of the county are dominated by nearly level flood plains. The central part is higher in elevation than the eastern and western parts. It consists of small prairie areas and rolling hills drained by many streams and creeks. According to Paul F. Grote, a local resident, in the early railroad days two engines were sometimes needed to pull the trains up to Baylis, which is at an elevation of 864 feet above sea level. Kinderhook, which is on bottom land along the Mississippi River, is at an elevation of 464 feet above sea level.

The upland areas in the northern and northeastern parts of the county were largely shaped by the last Illinoian glacial advances and were then covered by varying thicknesses of loess. Erosion of these materials has helped to create the current landscape. Upland areas in the southern part of the county were unglaciated and consist of limestone residuum, also covered by varying thicknesses of loess.

Approximately 25 percent of Pike County drains into the Illinois River basin, and 75 percent drains into the Mississippi River basin. The flood plains adjacent to these rivers make up about 160 square miles in Pike County (Hopkins and others, 1915).

The bottom land along the Mississippi River is the most extensive and ranges from 3 to 6 miles in width. The Sny Island Levee Drainage District, organized in 1872 and extending from Adams County to Calhoun County, develops and maintains both drainage and flood protection for this area. Bay Creek, Dutch Creek, and Six Mile Creek empty into diversions in this drainage area.

The northern part of the Illinois River bottom land

is protected by levees. Blue Creek and the South and Middle Forks of McKee Creek empty into this drainage area.

The largest areas of upland prairie soils are near Milton and Griggsville. Smaller areas of prairie soils are scattered throughout the uplands.

Agriculture, Silviculture, and Transportation Facilities

Agriculture is the primary industry in Pike County. The county ranks second in Illinois in hog inventories, fourth in beef cattle inventories, and sixth in hay production. In 1988, about 45 percent of the county, or 243,200 acres, was planted to corn, soybeans, or wheat (Illinois Agricultural Statistics Service, 1988).

In 1985, Pike County had 89,000 acres of upland deciduous forests and 3,000 acres of bottom-land forests. The upland forests consist primarily of quality hardwoods, including black walnut, red oak, white oak, sugar maple, ash, and hickory. Two full-time and several part-time sawmill operators regularly harvest these hardwoods.

Pike County has two major highways—U.S. Route 54 and U.S. Route 36. State Highways 57, 96, 99, 100, 104, and 107 also serve the county. Pittsfield Penstone Municipal Airport is centrally located. Barge service is available on the Illinois and Mississippi Rivers. Two railroads serve the survey area.

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 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.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. 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 soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns 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 (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soil on the landscape.

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

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 and some minor soils. It is named for the major soils. The soils making up one 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 unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Downs-Atterberry-Tama

Nearly level to moderately sloping, moderately well drained and somewhat poorly drained soils that formed in loess; on uplands

This map unit consists of soils on side slopes and ridgetops in the uplands. Slopes range from 0 to 10 percent.

This unit makes up about 5 percent of the county. It is about 50 percent Downs soils, 32 percent Atterberry soils, 13 percent Tama soils, and 5 percent soils of minor extent.

The gently sloping and moderately sloping, moderately well drained Downs soils are on side slopes and ridgetops. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 9 inches—very dark grayish brown, friable silt loam

Subsoil:
9 to 15 inches—brown, friable silt loam
15 to 24 inches—dark yellowish brown, friable silty clay loam
24 to 57 inches—yellowish brown and dark yellowish brown, mottled, friable silt loam

Substratum:
57 to 60 inches—brown, mottled, friable silt loam

The nearly level, somewhat poorly drained Atterberry soils are on broad ridgetops. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 8 inches—very dark grayish brown, very friable silt loam

Subsurface layer:
8 to 14 inches—dark grayish brown, friable silt loam

Subsoil:
14 to 35 inches—brown, mottled, friable silt loam and firm silty clay loam
35 to 49 inches—grayish brown, mottled, friable silt loam

Substratum:
49 to 60 inches—dark yellowish brown, mottled, friable silt loam

The gently sloping, moderately well drained Tama soils are on ridgetops. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 9 inches—very dark brown, friable silt loam

Subsurface layer:
9 to 21 inches—very dark brown and dark yellowish brown, friable silt loam

Subsoil:
21 to 41 inches—dark yellowish brown, firm silty clay loam
41 to 60 inches—dark yellowish brown, mottled, friable silt loam

Of minor extent in this unit are Herrick and Virden

soils. The somewhat poorly drained Herrick soils are on broad ridgetops. The poorly drained Virden soils are in the lower positions on the landscape. They have more clay in the profile than the major soils.

In most areas the major soils of this unit are used for cultivated crops. The main management concerns are controlling erosion, improving or upgrading the drainage system, and maintaining soil tilth and fertility.

2. Rozetta-Fayette-Downs

Gently sloping to strongly sloping, moderately well drained and well drained soils that formed in loess; on uplands

This map unit consists of soils on side slopes and ridgetops in the uplands. Most drainageways have strongly sloping or steep side slopes. Slopes range from 2 to 15 percent.

This unit makes up about 38 percent of the county. It is about 47 percent Rozetta soils, 28 percent Fayette soils, 6 percent Downs soils, and 19 percent soils of minor extent (fig. 2).

The gently sloping and moderately sloping, moderately well drained Rozetta soils are on ridgetops and side slopes. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 8 inches—brown, friable silt loam

Subsoil:
8 to 13 inches—brown, friable silt loam
13 to 33 inches—dark yellowish brown, firm silty clay loam
33 to 55 inches—yellowish brown, mottled, friable silt loam

Substratum:
55 to 60 inches—yellowish brown, mottled, friable silt loam

The gently sloping to strongly sloping, well drained Fayette soils are on side slopes and ridgetops. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 6 inches—brown, very friable silt loam

Subsoil:
6 to 11 inches—dark yellowish brown, friable silt loam
11 to 44 inches—dark yellowish brown, firm or friable silty clay loam
44 to 60 inches—dark yellowish brown, friable silt loam

The gently sloping and moderately sloping, moderately well drained Downs soils are on side slopes and ridgetops. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 9 inches—very dark grayish brown, friable silt loam

Subsoil:
9 to 15 inches—brown, friable silt loam
15 to 24 inches—dark yellowish brown, friable silty clay loam
24 to 57 inches—yellowish brown and dark yellowish brown, mottled, friable silt loam

Substratum:
57 to 60 inches—brown, mottled, friable silt loam

Of minor extent in this unit are Atterberry, Blair, Hickory, and Stronghurst soils. The somewhat poorly drained Atterberry and Stronghurst soils are on broad ridgetops. They are generally farther from drainageways than the major soils. The somewhat poorly drained Blair soils are in positions on the landscape downslope from the major soils. The well drained Hickory soils formed in a thin layer of loess and in the underlying glacial till. They are strongly sloping or steep and are on side slopes, generally downslope from the major soils.

In most areas the major soils of this unit are used for cultivated crops. The main management concerns are controlling erosion and improving soil tilth and fertility. Some of the steeper areas are used for pasture or as woodland.

3. Hickory-El Dara-Gosport

Strongly sloping to very steep, well drained and moderately well drained soils that formed in loess and glacial till, in glacial outwash, or in loess and shale residuum; on uplands

This map unit consists mainly of soils on side slopes in the uplands. Drainageways commonly have steep or very steep side slopes. Summits and crests between the drainageways are narrow and relatively long. Slopes range from 10 to 60 percent.

This unit makes up about 4 percent of the county. It is about 39 percent Hickory soils, 14 percent El

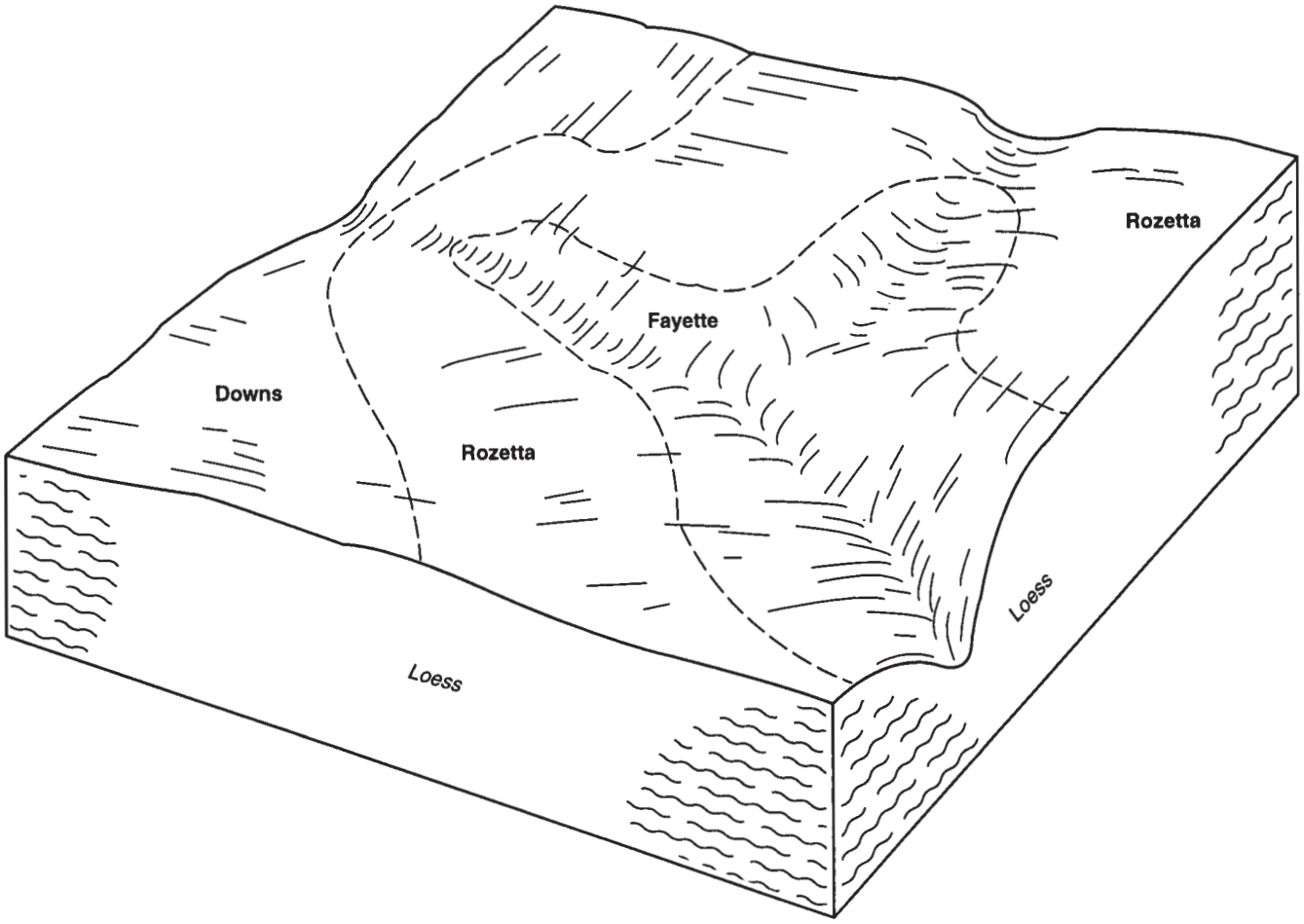

Figure 2.—Typical pattern of soils and parent material in the Rozetta-Fayette-Downs general soil map unit.

Dara soils, 6 percent Gosport soils, and 41 percent soils of minor extent (fig. 3).

The strongly sloping to very steep, well drained Hickory soils are on side slopes. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 5 inches—dark brown, friable silt loam

Subsoil:
5 to 24 inches—dark yellowish brown, friable silt loam and loam
24 to 60 inches—dark yellowish brown and yellowish brown, mottled, firm loam and clay loam

The strongly sloping to very steep, moderately well drained or well drained El Dara soils are on side slopes. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 4 inches—dark brown, friable fine sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown, friable fine sandy loam

Subsoil:
10 to 60 inches—dark yellowish brown and strong brown, friable fine sandy loam

The steep and very steep, moderately well drained Gosport soils are on side slopes. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 3 inches—dark grayish brown, friable silt loam

Subsurface layer:
3 to 5 inches—yellowish brown, friable silt loam

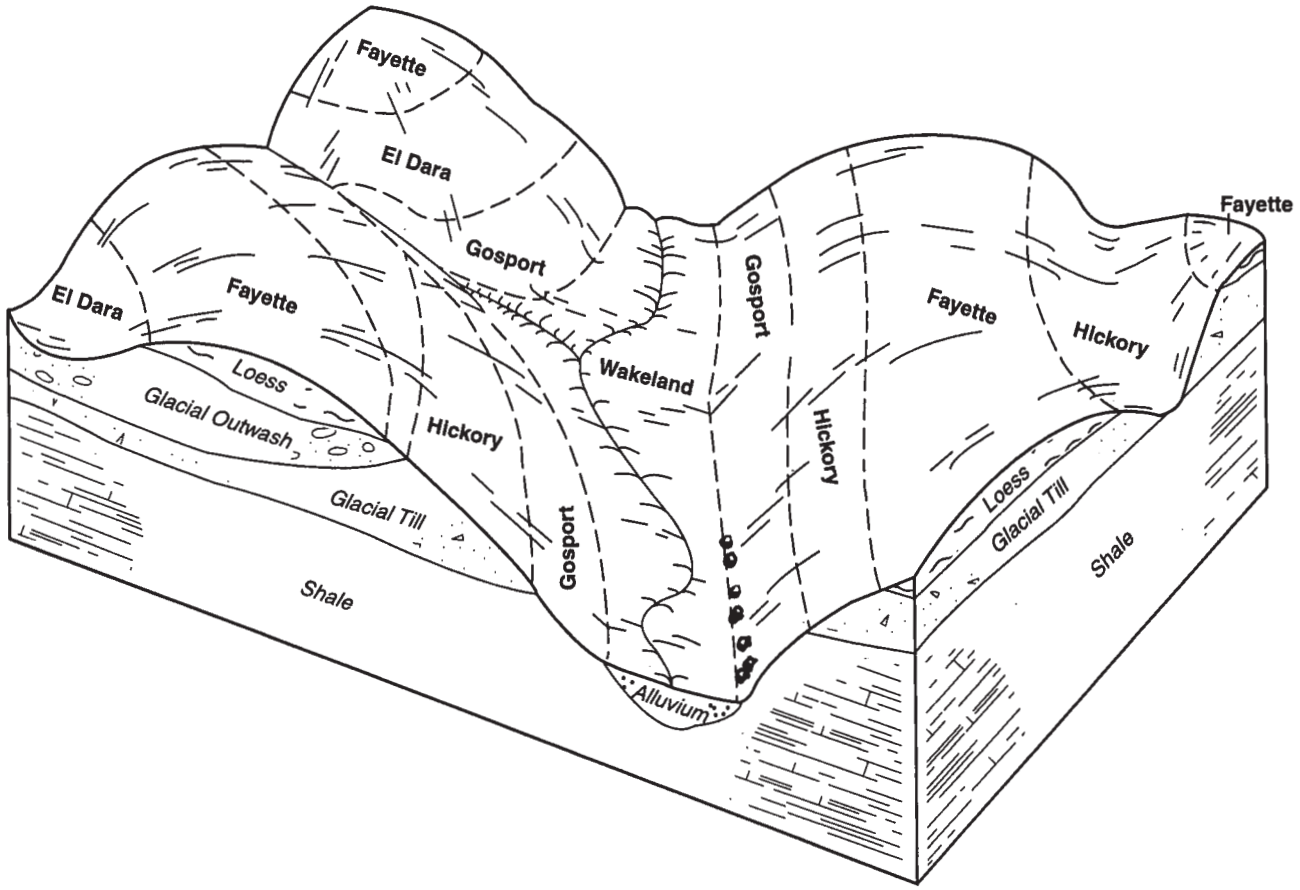

Figure 3.—Typical pattern of soils and parent material in the Hickory-El Dara-Gosport general soil map unit.

Subsoil:

5 to 10 inches—yellowish brown, firm silty clay loam

10 to 28 inches—light olive brown, mottled, firm silty clay

Substratum:

28 to 60 inches—olive brown, mottled clay shale with strata of very dark gray lignite

Of minor extent in this unit are Elco, Rozetta, Ursa, and Wakeland soils. Elco and Ursa soils are in landscape positions upslope from the major soils. The moderately well drained Elco soils formed in 20 to 40 inches of loess and in the underlying glacial till. The well drained Ursa soils formed in glacial till. They have more clay in the upper part of the subsoil than the major soils. Rozetta soils are moderately well drained. They formed entirely in loess. They are in the less sloping positions, upslope from the major soils. The somewhat poorly drained Wakeland soils are on narrow flood plains.

In most areas the major soils of this unit are used as woodland or for pasture. The main management concerns affecting woodland are controlling erosion, overcoming the slope, and reducing seedling mortality and plant competition. Erosion is the main management concern in areas used for pasture. Some of the less sloping areas are used for cultivated crops. In these areas, controlling erosion and improving soil tilth and fertility are concerns.

4. Fayette-Seaton-Goss

Moderately sloping to very steep, well drained soils that formed in loess or in limestone residuum; on uplands

This map unit consists mainly of soils on side slopes and ridgetops. Drainageways commonly have steep or very steep side slopes. Areas between the drainageways are narrow and are moderately sloping

or strongly sloping. Slopes range from 5 to 60 percent.

This unit makes up about 22 percent of the county. It is about 40 percent Fayette soils, 19 percent Seaton soils, 18 percent Goss soils, and 23 percent soils of minor extent (fig. 4).

The gently sloping to steep, well drained Fayette soils are on side slopes and ridgetops. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 6 inches—brown, very friable silt loam

Subsoil:
6 to 11 inches—dark yellowish brown, friable silt loam
11 to 44 inches—dark yellowish brown, firm or friable silty clay loam
44 to 60 inches—dark yellowish brown, friable silt loam

The moderately sloping to very steep Seaton soils are on side slopes and ridgetops. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 6 inches—very dark grayish brown, friable silt loam

Subsurface layer:
6 to 9 inches—brown, friable silt loam

Subsoil:
9 to 60 inches—dark yellowish brown, friable silt loam

The steep and very steep Goss soils are on side slopes. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 5 inches—dark brown, friable gravelly silt loam

Subsoil:
5 to 13 inches—brown, firm extremely gravelly silty clay loam
13 to 60 inches—yellowish red, firm gravelly to extremely gravelly silty clay

Of minor extent in this unit are Baylis, Elizabeth, Lacrescent, Timula, and Wakeland soils. The moderately well drained Baylis soils formed in loess and limestone residuum. They are in landscape positions downslope from the Fayette and Seaton soils. Elizabeth and Lacrescent soils are on side slopes. The somewhat excessively drained Elizabeth soils are shallow to limestone bedrock. Lacrescent soils have a thick, dark surface layer. Timula soils are near the bluffs along the major rivers. They formed entirely in loess. They are in positions on the landscape similar to those of the Fayette and Seaton soils. The somewhat poorly drained Wakeland soils are on narrow flood plains.

In most areas the major soils of this unit are used as woodland or for pasture. The main management concerns affecting woodland are controlling erosion, overcoming the slope, and reducing seedling mortality and plant competition. Erosion is the main management concern in areas used for pasture. Some of the less sloping areas are used for cultivated crops. In these areas, controlling erosion and improving soil tilth and fertility are concerns.

5. Wakeland-Elsah-Haymond

Nearly level, somewhat poorly drained, somewhat excessively drained, and well drained soils that formed in alluvium; on flood plains

This map unit consists mainly of nearly level soils on flood plains. Former stream channels are widely scattered throughout the flood plain. Slopes range from 0 to 2 percent.

This unit makes up about 10 percent of the county. It is about 47 percent Wakeland soils, 13 percent Elsah soils, 13 percent Haymond soils, and 27 percent soils of minor extent.

Wakeland soils are somewhat poorly drained. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 7 inches—brown, very friable silt loam

Substratum:
7 to 33 inches—variegated brown and grayish brown, mottled, friable silt loam
33 to 60 inches—variegated dark gray and dark grayish brown, mottled, friable silt loam

Elsah soils are somewhat excessively drained. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 6 inches—brown and dark brown, friable gravelly loam

Substratum:
6 to 12 inches—brown, friable very gravelly loam
12 to 42 inches—yellowish brown and dark

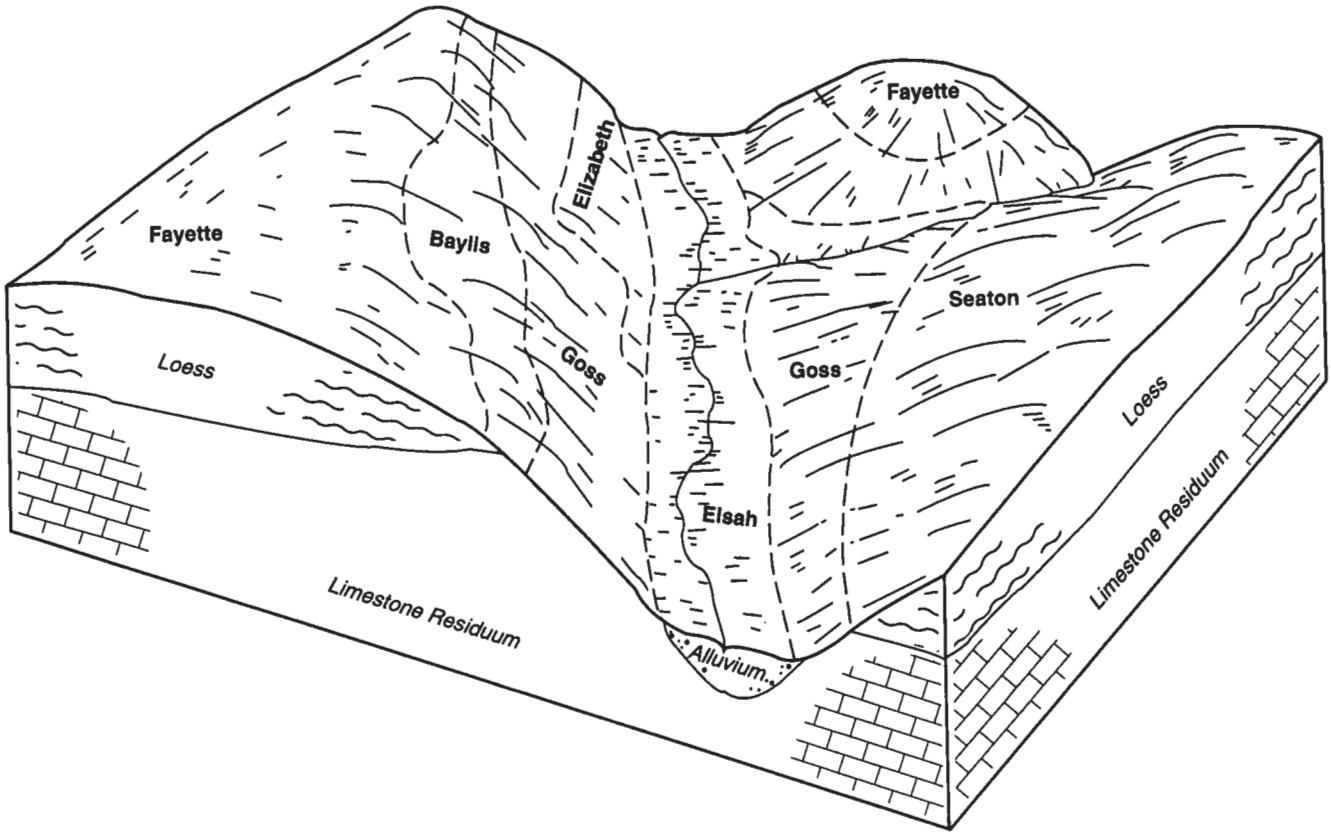

Figure 4.—Typical pattern of soils and parent material in the Fayette-Seaton-Goss general soil map unit.

yellowish brown, very friable and friable very gravelly sandy loam

42 to 60 inches—mottled yellowish brown and brown, friable and very friable gravelly loam or very gravelly sandy loam

Haymond soils are well drained. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:

0 to 9 inches—dark brown, friable silt loam

Subsoil:

9 to 40 inches—dark brown and brown, friable silt loam

Substratum:

40 to 60 inches—brown, mottled, friable silt loam

Of minor extent in this unit are Beaucoup, Coffeen, Drury, Twomile, and Darwin soils. These soils have more clay or fewer rock fragments in the profile, or both, than the major soils. The poorly drained Beaucoup and Darwin soils are in the lower, slightly concave positions on the landscape. The somewhat poorly drained Coffeen soils are in landscape positions similar to those of the Wakeland soils. The well drained Drury soils are in the more sloping positions on footslopes at the base of bluffs. The poorly drained Twomile soils are on low stream terraces at the slightly higher elevations.

In most areas the major soils of this unit are used as cropland. The main management concerns are controlling flooding, improving or upgrading the drainage system, and improving tilth and fertility. Undrained areas and areas outside the levees along the Mississippi River are used as habitat for wetland wildlife.

6. Beaucoup-Coffeen-Titus

Nearly level, poorly drained and somewhat poorly drained soils that formed in alluvium or slackwater sediments; on flood plains

This map unit consists mainly of nearly level soils on flood plains. Depressions and former stream channels are widely scattered throughout the flood plain. Slopes range from 0 to 2 percent.

This unit makes up about 21 percent of the county.

It is about 28 percent Beaucoup soils, 17 percent Coffeen soils, 14 percent Titus soils, and 41 percent soils of minor extent.

Beaucoup soils are poorly drained. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 7 inches—very dark grayish brown, friable silty clay loam

Subsurface layer:
7 to 12 inches—very dark gray, firm silty clay loam

Subsoil:
12 to 60 inches—dark gray, mottled, firm silty clay loam

Coffeen soils are somewhat poorly drained. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface soil:
0 to 14 inches—very dark grayish brown, very friable silt loam

Subsoil:
14 to 45 inches—dark grayish brown, mottled, friable and very friable silt loam

Substratum:
45 to 60 inches—gray, mottled, friable silt loam

Titus soils are poorly drained. The typical sequence, depth, and composition of the layers of these soils are as follows—

Surface layer:
0 to 10 inches—black, firm silty clay

Subsurface layer:
10 to 15 inches—very dark gray, firm silty clay

Subsoil:
15 to 46 inches—dark gray, mottled, firm silty clay loam
46 to 60 inches—very dark gray, mottled, firm silty clay

Of minor extent in this unit are Raddle, Shaffton, Twomile, Vesser, and Wakeland soils. The well drained Raddle soils are on footslopes adjacent to the bluffs. Shaffton soils are somewhat poorly drained. They have more sand in the profile than the major soils. They are on swells on the flood plain. The poorly drained Twomile soils are on the slightly higher stream terraces. Vesser soils have more silt and less clay in the profile than the Beaucoup and Titus soils. Vesser soils are in positions on the landscape similar to those of the Coffeen soils and are slightly higher than the Beaucoup and Titus soils. The somewhat poorly drained Wakeland soils have a lighter colored surface layer than the Coffeen soils. Also, they are in similar positions on the landscape.

In most areas the major soils of this unit are used as cropland. The main management concerns are improving or upgrading the drainage system and maintaining soil tilth and fertility. Undrained areas are used as habitat for wetland wildlife.

Broad Land Use Considerations

The soils in Pike County vary widely in their suitability for major land uses. About 53 percent of the county is used for cultivated crops, mainly corn, soybeans, wheat, and hay. This cropland is scattered throughout the county, but most of the acreage is in map units 1, 2, 5, and 6. Map units 1 and 2 are on uplands where the main management concern is the hazard of water erosion. Map unit 5 is on flood plains and is subject to frequent flooding, mainly in early spring. The flooding delays planting in most years and causes damage to crops in some years. The seasonal high water table is a limitation affecting crops in areas of Wakeland soils. In areas of Elsah soils used for cultivated crops, the low available water capacity and excessive nutrient leaching are limitations. The hazard of soil blowing is also a concern. Map unit 6 is on flood plains, but a system of levees and diversions provides some protection from flooding. The soils in this map unit are subject to occasional flooding. The main limitation is the seasonal high water table in areas of Beaucoup and Titus soils.

About 16 percent of the land in the county is used for pasture. The pasture is largely in map units 3 and 4. Some of the more sloping areas in map unit 2 are also used for pasture. El Dara, Fayette, Hickory, and Seaton soils are the main soils used for pasture. The main management concern in areas of these soils is the hazard of erosion.

About 14 percent of the county is woodland. The woodland is scattered throughout the county but is largely in map units 3 and 4. In these areas, the slope is a limitation and the hazard of erosion is a major concern. In areas of map unit 5, flooding and wetness are the major concerns.

Only about 1 percent of the county has been developed for urban uses. The soils that are best suited to these uses are in map units 1 and 2. The less sloping areas in map unit 4 are also suited to urban development. Downs, Fayette, Rozetta, and Seaton soils are the major soils in these map units

that are suited to this use. Most of the soils in map units 3 and 4 are generally unsuitable as sites for dwellings because of the slope. Soils in map units 5 and 6 are generally unsuitable as sites for dwellings because of flooding.

The suitability for recreational uses ranges from good to poor, depending on the intensity of expected use. The slope in areas of map units 3 and 4 limits the use of the soils for intensive recreational development, such as playgrounds and camp areas. The soils in map unit 5 are poorly suited to intensive development because of frequent flooding and the seasonal high water table. Small areas in all map units are suitable for intensive recreational development, even in areas that are generally poorly suited to this use. All of the map units have many areas that are suitable for less intensive recreational uses, such as fishing, hunting, hiking, or horseback riding.

The suitability for wildlife habitat is excellent throughout the county. Map units 1, 2, 5, and 6 are well suited to use as habitat for openland wildlife. The suitability for woodland wildlife habitat is good in map units 3, 4, and 5. Many of the soils in map units 5 and 6 are well suited to use as habitat for wetland wildlife.

Detailed Soil Map Units

The map units on the detailed soil maps in this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information is given under the heading "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil 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 or of the substratum, 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 or of the substratum. They also can differ in slope, stoniness, salinity, wetness, 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, Seaton silt loam, 30 to 50 percent slopes, is a phase of the Seaton series.

Some map units are made up of two or more major soils. These map units are called soil complexes. A *soil complex* consists of two or more soils, or one or more soils and a miscellaneous area, in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Ambraw-Ceresco-Sarpy complex, occasionally flooded, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarries, is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see Contents) give 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.

5C2—Blair silt loam, 5 to 10 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 70 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: 0 to 20 inches of loess and the underlying pedisediment or glacial till
Runoff: Medium
Available water capacity: High
Seasonal high water table: 1.5 to 3.5 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—mixed dark brown and brown, firm silt loam

Subsoil:
5 to 35 inches—brown, dark yellowish brown, and yellowish brown, mottled, firm silty clay loam
35 to 60 inches—grayish brown and gray, mottled, very firm clay loam

Composition

Blair and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have a surface layer of silty clay loam
- Soils that have a seasonal high water table at a depth of less than 1.5 feet

Contrasting inclusions:
- The moderately well drained Rozetta soils in landscape positions upslope from the Blair soil
- The moderately well drained Elco soils in landscape positions downslope from the Blair soil
- Keomah and Clarksdale soils on broad ridgetops upslope from the Blair soil

Use and Management

Cropland

Management concerns: Erosion, wetness, and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that includes 1 or more years of forage crops help to control erosion.
- Hillside seeps are common. Random subsurface drainage helps to remove excess water in seepy areas.
- Tilling when the soil is wet causes surface cloddiness, compaction, and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion and wetness
Management measures or considerations:
- Establishing pasture plants or hay helps to control erosion.
- Overgrazing or grazing when the soil is too wet reduces forage production and causes surface compaction, excessive runoff, and poor tilth. Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, and tall fescue. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
- Installing subsurface tile drains near the foundation helps to overcome the wetness. Also, in dwellings without basements, the wetness can be overcome by elevating the floor around the surrounding ground level, by grading, and by diverting surface water.

Septic tank absorption fields

Management concerns: Wetness and the moderately slow permeability
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains higher on the side slope than the absorption field helps to lower the water table.
- Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 4A

5C3—Blair silty clay loam, 5 to 10 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 40 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Pedisediment or glacial till
Runoff: Medium
Available water capacity: High
Seasonal high water table: 1.5 to 3.5 feet below the surface
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 3 inches—brown, friable silty clay loam

Subsoil:
3 to 23 inches—dark yellowish brown and yellowish brown, mottled, firm silty clay loam
23 to 43 inches—yellowish brown and dark yellowish brown, mottled, firm silt loam
43 to 60 inches—yellowish brown, mottled, firm loam

Composition

Blair and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have a surface layer of silt loam
- Soils that have a seasonal high water table at a depth of less than 1.5 feet

Contrasting inclusions:
- The moderately well drained Rozetta soils in landscape positions upslope from the Blair soil
- The moderately well drained Elco soils in landscape positions downslope from the Blair soil
- Keomah and Clarksdale soils on ridgetops upslope from the Blair soil

Use and Management

Cropland

Management concerns: Erosion, wetness, and tilth
Management measures or considerations:
- A crop rotation dominated by forage crops and a conservation tillage system that leaves crop residue on the surface after planting help to control erosion.
- Hillside seeps are common. Random subsurface drainage helps to remove excess water in seepy areas.
- Tilling when the soil is wet causes surface cloddiness, compaction, and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion and wetness
Management measures or considerations:
- Establishing pasture plants or hay helps to control erosion.
- Overgrazing or grazing when the soil is too wet reduces forage production and causes surface compaction, excessive runoff, and poor tilth. Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition.
- Preparing a good seedbed is difficult on this soil because of surface crusting and cloddiness.
- Although yields are low, bromegrass, orchardgrass, tall fescue, and alfalfa are suited to this soil. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.

• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Installing subsurface tile drains near the foundation helps to overcome the wetness. Also, in dwellings without basements, the wetness can be overcome by elevating the floor around the surrounding ground level, by grading, and by diverting surface water.

Septic tank absorption fields

Management concerns: Wetness and the moderately slow permeability
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains higher on the side slope than the absorption field helps to lower the water table.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

5D2—Blair silt loam, 10 to 15 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 75 acres
Major use: Pasture

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: 0 to 20 inches of loess and the underlying pedisediment and glacial till
Runoff: Rapid
Available water capacity: High
Seasonal high water table: 1.5 to 3.5 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark brown, friable silt loam

Subsurface layer:
6 to 12 inches—brown, mottled, friable silt loam

Subsoil:
12 to 34 inches—brown and yellowish brown, mottled, firm silty clay loam
34 to 60 inches—grayish brown, mottled, firm loam and silty clay loam

Composition

Blair and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have a seasonal high water table at a depth of less than 1.5 feet
• Soils that have more clay in the subsoil
• Soils that have a surface layer of silty clay loam

Contrasting inclusions:
• The moderately well drained Rozetta soils in landscape positions upslope from the Blair soil
• The well drained Hickory soils in landscape positions downslope from the Blair soil
• The well drained and moderately well drained El Dara soils in landscape positions downslope from the Blair soil

Use and Management

Cropland

Management concerns: Erosion, wetness, and tilth
Management measures or considerations:
• A crop rotation dominated by forage crops and a conservation tillage system that leaves crop residue on the surface after planting help to control erosion.
• Hillside seeps are common. Random subsurface drainage helps to remove excess water in seepy areas.
• Tilling when the soil is wet causes surface cloddiness, compaction, and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion and wetness
Management measures or considerations:
• A cover of grasses and legumes improves tilth and helps to control erosion.

• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion.
• The plants should not be grazed or harvested until they are sufficiently established.
• Overgrazing or grazing when the soil is too wet reduces forage production and causes surface compaction, excessive runoff, and poor tilth. Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness, the shrink-swell potential, and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains near the foundation helps to overcome the wetness. Also, in dwellings without basements, the wetness can be overcome by elevating the floor around the surrounding ground level, by grading, and by diverting surface water.
• For dwellings with basements, reinforcing foundations and footings helps to prevent the structural damage caused by shrinking and swelling.
• Alteration of the slope by cutting, filling, and land shaping helps to overcome the slope.

Septic tank absorption fields

Management concerns: Wetness, the moderately slow permeability, and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains higher on the side slope than the absorption field helps to lower the water table.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

5D3—Blair silty clay loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 70 acres
Major uses: Pasture and hayland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Pedisediment and the underlying glacial till
Runoff: Rapid
Available water capacity: Moderate
Seasonal high water table: 1.5 to 3.5 feet below the surface
Organic matter content: Low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—brown, firm silty clay loam

Subsoil:
5 to 43 inches—brown and yellowish brown, mottled, firm silty clay loam
43 to 60 inches—grayish brown, mottled, firm silty clay loam and clay loam

Composition

Blair and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a surface layer of silt loam
• Soils that have more clay in the subsoil
• Soils that have a seasonal high water table at a depth of less than 1.5 feet
• Soils that have outwash in the lower part of the subsoil

Contrasting inclusions:
• The moderately well drained Rozetta soils, which formed entirely in loess; in landscape positions upslope from the Blair soil
• The moderately well drained and well drained El Dara soils in landscape positions downslope from the Blair soil

Use and Management

Pasture and hay

Management concerns: Erosion and wetness
Management measures or considerations:
• Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion.
• The plants should not be grazed or harvested until they are sufficiently established.
• Overgrazing or grazing when the soil is too wet reduces forage production and causes surface compaction, excessive runoff, and poor tilth. Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness, the shrink-swell potential, and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains near the foundation helps to overcome the wetness. Also, in dwellings without basements, the wetness can be overcome by elevating the floor around the surrounding ground level, by grading, and by diverting surface water.
• For dwellings with basements, reinforcing foundations and footings helps to prevent the structural damage caused by shrinking and swelling.
• Alteration of the slope by cutting, filling, and land shaping helps to overcome the slope.

Septic tank absorption fields

Management concerns: Wetness, the moderately slow permeability, and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains higher on the side slope than the absorption field helps to lower the water table.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4A

8D2—Hickory silt loam, 10 to 15 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 10 to 275 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Less than 20 inches of loess and the underlying glacial till
Runoff: Medium
Available water capacity: High
Organic matter content: Moderately low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 6 inches—mixed dark yellowish brown and strong brown, friable silt loam

Subsoil:
6 to 19 inches—strong brown, firm silty clay loam

19 to 29 inches—strong brown, firm clay loam
29 to 60 inches—yellowish brown, mottled, firm clay loam

Composition

Hickory and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have more sand in the lower part of the profile
• Soils that have more clay in the subsoil
• Soils that have a surface layer of silty clay loam

Contrasting inclusions:
• The somewhat poorly drained Wakeland soils in drainageways downslope from the Hickory soil
• The moderately well drained Rozetta and well drained Fayette soils in landscape positions upslope from the Hickory soil
• The moderately well drained Elco soils in landscape positions upslope from the Hickory soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A crop rotation that includes 1 or more years of forage crops, terraces, and a conservation tillage system that leaves crop residue on the surface after planting help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion.
• The plants should not be grazed or clipped until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 5A

8D3—Hickory silty clay loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 45 acres
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Less than 20 inches of loess and the underlying glacial till
Runoff: Medium

Available water capacity: High
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown, firm silty clay loam

Subsoil:
6 to 16 inches—yellowish brown, firm silty clay loam
16 to 39 inches—yellowish brown and dark yellowish brown, mottled, firm clay loam
39 to 60 inches—dark brown, mottled, friable clay loam

Composition

Hickory and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more sand in the lower part of the profile
• Soils that have more clay in the subsoil
• Soils that have a surface layer of silt loam or clay loam

Contrasting inclusions:
• The somewhat poorly drained Blair and moderately well drained Elco soils in landscape positions upslope from the Hickory soil
• The somewhat poorly drained Wakeland soils in drainageways downslope from the Hickory soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A crop rotation that includes 1 or more years of forage crops, a conservation tillage system that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion.
• The plants should not be grazed or clipped until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 5A

8E—Hickory loam, 15 to 30 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 4 to 20 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Less than 20 inches of loess and the underlying glacial till
Runoff: Rapid
Available water capacity: High
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 3 inches—dark brown, friable loam

Subsurface layer:
3 to 7 inches—brown, friable loam

Subsoil:
7 to 23 inches—yellowish brown, firm loam
23 to 60 inches—strong brown, firm clay loam

Composition

Hickory and similar soils: 88 to 92 percent

Inclusions

Similar inclusions:
- Soils that have more sand in the lower part of the profile
- Soils that have more clay in the subsoil
- Soils that have more clay in the surface layer
- Soils that have a thicker mantle of loess
- Soils that have clayey shale residuum in the lower part of the subsoil below the glacial till

Contrasting inclusions:
- The somewhat poorly drained Wakeland soils on flood plains downslope from the Hickory soil
- The moderately well drained Elco and well drained Fayette soils in landscape positions upslope from the Hickory soil
- Goss soils, which have more clay and chert fragments than the Hickory soil; in landscape positions downslope from the Hickory soil
- Gosport soils, which are moderately deep to bedrock; in landscape positions downslope from the Hickory soil

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Maintaining a permanent cover of pasture plants helps to control erosion.
- In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion.
- The plants should not be grazed or clipped until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Slope, erosion, and plant competition
Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Erosion
Management measures or considerations:
- In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
- Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
- Measures that protect the habitat from fire and

grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: The shrink-swell potential and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 5R

8E2—Hickory silt loam, 15 to 30 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 4 to 95 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Less than 20 inches of loess and the underlying glacial till
Runoff: Rapid
Available water capacity: High
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 5 inches—dark brown, friable silt loam

Subsoil:
5 to 24 inches—dark yellowish brown, friable silt loam and loam
24 to 60 inches—dark yellowish brown and yellowish brown, mottled, firm loam and clay loam

Composition

Hickory and similar soils: 88 to 92 percent

Inclusions

Similar inclusions:
• Soils that have more sand in the lower part of the profile
• Soils that have more clay in the subsoil
• Soils that have a surface layer of silty clay loam
• Soils that have a thicker mantle of loess
• Soils that have shale residuum in the lower part of the subsoil below the glacial till

Contrasting inclusions:
• The somewhat poorly drained Wakeland soils in drainageways downslope from the Hickory soil
• The moderately well drained Elco and well drained Fayette soils in landscape positions upslope from the Hickory soil
• Goss soils, which have more clay and chert fragments than the Hickory soil; in landscape positions downslope from the Hickory soil
• Gosport soils, which are moderately deep to bedrock; in landscape positions downslope from the Hickory soil

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a permanent cover of pasture plants helps to control erosion.
• In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion.
• The plants should not be grazed or clipped until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Slope, erosion, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.

• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Erosion
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: The shrink-swell potential and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 5R

8G—Hickory silt loam, 30 to 60 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 3 to 35 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Less than 20 inches of loess over glacial till
Runoff: Rapid
Available water capacity: High
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 3 inches—dark brown, friable silt loam

Subsurface layer:
3 to 7 inches—brown, friable silt loam

Subsoil:
7 to 23 inches—yellowish brown, firm silt loam and loam
23 to 60 inches—strong brown, firm clay loam

Composition

Hickory and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more sand in the lower part of the profile
• Soils that have more clay in the subsoil
• Soils that have a thicker mantle of loess
• Soils that have shale residuum in the lower part of the subsoil below the glacial till

Contrasting inclusions:
• The somewhat poorly drained Wakeland soils in drainageways downslope from the Hickory soil
• The moderately well drained Elco and well drained Fayette soils in landscape positions upslope from the Hickory soil
• Goss soils, which have more clay and chert fragments than the Hickory soil; in landscape positions downslope from the Hickory soil

• Gosport soils, which are moderately deep to bedrock; in landscape positions downslope from the Hickory soil

Use and Management

Woodland

Suitability: Well suited
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Suitability: Well suited
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 5R

17A—Keomah silt loam, 0 to 2 percent slopes

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 2 to 75 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Slow
Parent material: Loess
Runoff: Slow
Available water capacity: High
Seasonal high water table: 2 to 4 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

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

Subsurface layer:
8 to 10 inches—grayish brown, friable silt loam

Subsoil:
10 to 13 inches—brown, mottled, firm silty clay loam
13 to 46 inches—grayish brown, mottled, firm silty clay and silty clay loam

Substratum:
46 to 60 inches—grayish brown, mottled, friable silt loam

Composition

Keomah and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have less clay in the subsoil
• Soils that have a dark surface layer

Contrasting inclusions:
• The moderately well drained Rozetta soils in the more sloping positions on the landscape
• Poorly drained soils in shallow depressions that are subject to ponding

Use and Management

Cropland

Management concerns: Erosion, wetness, and tilth
Management measures or considerations:
• A drainage system has been installed in most areas. Measures that maintain the drainage system are needed. Additional drainage may be needed in some areas. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available.
• Applying a system of conservation tillage that leaves crop residue on the surface after planting and returning crop residue to the soil improve tilth, help to prevent surface compaction and crusting, and increase the rate of water infiltration.

Pasture and hay

Management concerns: Wetness
Management measures or considerations:
• Overgrazing or grazing when the soil is too wet reduces forage production and causes surface compaction, excessive runoff, and poor tilth.
• Installing surface drains and subsurface tile helps to remove excess water.
• Proper stocking rates, rotation grazing, and deferred grazing when the soil is wet help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness and the slow permeability
Management measures or considerations:
• Onsite investigation is needed.
• Subsurface tile drains lower the water table.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 3A

17B—Keomah silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 2 to 75 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Slow
Parent material: Loess
Runoff: Medium
Available water capacity: High
Seasonal high water table: 2 to 4 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—grayish brown, friable silt loam

Subsoil:
10 to 32 inches—brown, firm silty clay loam
32 to 60 inches—yellowish brown, mottled, firm silty clay loam and silt loam

Composition

Keomah and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a dark surface layer

Contrasting inclusions:
- The moderately well drained Rozetta and Sylvan soils in the more sloping positions on the landscape

Use and Management

Cropland

Management concerns: Erosion, wetness, and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
- In problem areas, excess water can be removed by surface ditches or subsurface drains.
- Returning crop residue to the soil and regularly adding other organic material minimize crusting and compaction and improve tilth.

Pasture and hay

Management concerns: Wetness and erosion
Management measures or considerations:
- Overgrazing or grazing when the soil is too wet reduces forage production and causes surface compaction, excessive runoff, and poor tilth.
- Installing surface drains and subsurface tile helps to remove excess water.
- Proper stocking rates, rotation grazing, and deferred grazing when the soil is wet help to keep the pasture in good condition.
- A no-till method of pasture renovation helps to control erosion.
- The plants should not be grazed or clipped until they are sufficiently established.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential and wetness
Suitability: Poorly suited
Management measures or considerations:
- Onsite investigation is needed.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
- On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness and the slow permeability
Management measures or considerations:
- Onsite investigation is needed.
- Subsurface tile drains lower the water table.
- Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 3A

19B2—Sylvan silt loam, 2 to 5 percent slopes, eroded

Setting

Position on the landform: Ridgetops
Shape of areas: Irregular
Size of areas: 3 to 50 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Moderate

Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown, firm silt loam

Subsoil:
7 to 37 inches—dark brown, mottled, firm silty clay loam
37 to 47 inches—grayish brown, mottled, friable silty clay loam

Substratum:
47 to 60 inches—grayish brown, mottled, friable silt loam

Composition

Sylvan and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a thicker subsoil and have carbonates at a depth of more than 40 inches
• Soils that have less clay in the subsoil
• Soils that have a dark surface layer

Contrasting inclusions:
• Timula soils, which have less clay in the subsoil than the Sylvan soil; in landscape positions downslope from the Sylvan soil
• The somewhat poorly drained Stronghurst soils in the less sloping positions on the landscape

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
• Returning crop residue to the soil and adding other organic material improve soil tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Establishing pasture plants or hay helps to control erosion.
• Overgrazing reduces forage production and causes excessive runoff and erosion. Proper stocking rates and rotation grazing help to keep the pasture in good condition.
• A no-till method of pasture renovation or seeding helps to establish forage species and helps to control further erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains helps to lower the seasonal high water table.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 4A

19C2—Sylvan silt loam, 5 to 10 percent slopes, eroded

Setting

Position on the landform: Side slopes

Shape of areas: Irregular
Size of areas: 3 to 30 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—brown and dark yellowish brown, friable silt loam

Subsoil:
9 to 16 inches—dark yellowish brown, firm silt loam
16 to 27 inches—yellowish brown and brown, mottled, firm silt loam
27 to 35 inches—grayish brown, mottled, friable silt loam

Substratum:
35 to 60 inches—grayish brown, mottled, friable silt loam

Composition

Sylvan and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a thicker subsoil and have carbonates at a depth of more than 40 inches
• Soils that have less clay in the subsoil
• Soils that have a darker surface layer

Contrasting inclusions:
• The somewhat poorly drained Stronghurst soils on the less sloping ridgetops upslope from the Sylvan soil
• The moderately well drained Elco soils, which have more sand in the lower part of the subsoil than the Sylvan soil; in landscape positions downslope from the Sylvan soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Adapted forage and hay plants grow well on this soil.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

• On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains helps to lower the seasonal high water table.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 4A

19C3—Sylvan silty clay loam, 5 to 10 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 3 to 35 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—yellowish brown, firm silty clay loam

Subsoil:
7 to 19 inches—yellowish brown, mottled, firm silty clay loam
19 to 25 inches—brown, mottled, friable silt loam

Substratum:
25 to 60 inches—light brownish gray, mottled, friable silt loam

Composition

Sylvan and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a thicker subsoil and have carbonates at a depth of more than 40 inches
• Soils that have less clay in the subsoil
• Soils that have a surface layer of silt loam

Contrasting inclusions:
• The somewhat poorly drained Stronghurst soils on the less sloping ridgetops upslope from the Sylvan soil
• The moderately well drained Elco and somewhat poorly drained Blair soils, which have more sand in the lower part of the subsoil than the Sylvan soil; on side slopes downslope from the Sylvan soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
• Tilling when the soil is wet causes surface cloddiness and compaction and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Establishing pasture plants or hay helps to control erosion.
• Overgrazing reduces forage yields and causes excessive runoff and erosion. Proper stocking rates and rotation grazing help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.

• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains helps to lower the seasonal high water table.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

19D3—Sylvan silty clay loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 3 to 25 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—brown, firm silty clay loam

Subsoil:
5 to 16 inches—dark yellowish brown and yellowish brown, mottled, firm silty clay loam
16 to 30 inches—light brownish gray, mottled, friable silt loam

Substratum:
30 to 60 inches—mottled light brownish gray and dark yellowish brown, friable silt loam

Composition

Sylvan and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a thicker subsoil and have carbonates at a depth of more than 40 inches
• Soils that have less clay in the subsoil
• Soils that have a surface layer of silt loam

Contrasting inclusions:
• The moderately well drained Elco and somewhat poorly drained Blair soils, which have more sand in the lower part of the subsoil than the Sylvan soil; in landscape positions downslope from the Sylvan soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
• Tilling when the soil is wet causes surface cloddiness and compaction and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Establishing pasture and hay crops helps to control erosion.
• Seedbed preparation is difficult on severely eroded side slopes where the subsoil is exposed. A no-till method of pasture renovation or seeding helps to control further erosion. The plants should not be grazed until they are sufficiently established.

• Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and help to prevent surface compaction and excessive runoff.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential, wetness, and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Installing tile drains near the foundation or installing interceptor drains on side slopes that are higher than the building helps to lower the water table in areas used for dwellings with basements.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.
• Installing subsurface tile drains higher on the side slopes than the absorption field helps to intercept seepage water and lower the water table.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4A

30F—Hamburg silt, 20 to 30 percent slopes

Setting

Position on the landform: Convex hillsides
Shape of areas: Long and irregular
Size of areas: 5 to 20 acres
Major use: Openland wildlife habitat

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: High
Organic matter content: Low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—brown, very friable silt

Subsurface layer:
5 to 12 inches—yellowish brown and brown, very friable silt

Substratum:
12 to 60 inches—light yellowish brown and yellowish brown, very friable silt

Composition

Hamburg and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have carbonates closer to the surface

Contrasting inclusions:
• The well drained Seaton and Timula soils in landscape positions upslope from the Hamburg soil
• Areas of bedrock outcrops and residuum on the lower part of side slopes

Use and Management

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• Grain, seed crops, and grasses and legumes, such as bromegrass, orchardgrass, ladino clover, alsike clover, and red clover, can be grown along with the wild herbaceous plants that provide food and cover for openland wildlife.

• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Woodland

Management concerns: Slope, erosion, and seedling mortality
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The seedling mortality rate can be reduced by planting mature stock and clearing all vegetation within 2 feet of the planted seedlings.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 2R

30G—Hamburg silt, 30 to 65 percent slopes

Setting

Position on the landform: Convex hillsides
Shape of areas: Long and irregular
Size of areas: 5 to 20 acres
Major use: Openland wildlife habitat

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: High
Organic matter content: Low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 4 inches—dark brown, friable silt

Subsurface layer:
4 to 9 inches—yellowish brown, friable silt

Substratum:
9 to 60 inches—yellowish brown, friable silt

Composition

Hamburg and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have carbonates closer to the surface

Contrasting inclusions:
• The well drained Lacrescent soils in landscape positions downslope from the Hamburg soil
• The well drained Seaton and Timula soils on the upper parts of side slopes and on narrow ridgetops upslope from the Hamburg soil
• Escarpments, ledges of bedrock, and a narrow talus slope of mixed soil and stony material at the base of some areas

Use and Management

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• Grain, seed crops, and grasses and legumes, such as bromegrass, orchardgrass, ladino clover, alsike

clover, and red clover, can be grown along with the wild herbaceous plants that provide food and cover for openland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Woodland

Management concerns: Slope, erosion, and seedling mortality
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The seedling mortality rate can be reduced by planting mature stock and clearing all vegetation within 2 feet of the planted seedlings.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 2R

36B—Tama silt loam, 1 to 5 percent slopes

Setting

Position on the landform: Convex ridgetops
Shape of areas: Irregular
Size of areas: 5 to 80 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderate
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—very dark brown, friable silt loam

Subsurface layer:
9 to 21 inches—very dark brown and dark yellowish brown, friable silt loam

Subsoil:
21 to 41 inches—dark yellowish brown, firm silty clay loam
41 to 60 inches—dark yellowish brown, mottled, friable silt loam

Composition

Tama and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have less clay in the subsoil
• Soils that have a seasonal high water table at a depth of less than 4 feet
• Soils that have a thinner surface layer

Contrasting inclusions:
• The somewhat poorly drained Ipava soils in the less sloping positions on the landscape

Use and Management

Cropland

Management concerns: Erosion
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
• Returning crop residue to the soil or regularly

adding other organic material helps to maintain productivity and tilth.

Dwellings

Management concerns: The shrink-swell potential and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains helps to lower the seasonal high water table.

Interpretive Groups

Land capability classification: IIe

37B—Worthen silt loam, 1 to 4 percent slopes

Setting

Position on the landform: Footslopes
Shape of areas: Irregular
Size of areas: 5 to 250 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderate
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

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

Subsurface layer:
8 to 22 inches—very dark gray, friable silt loam

Subsoil:
22 to 60 inches—dark brown, dark yellowish brown, and brown, friable silt loam

Composition

Worthen and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a thinner surface layer and subsurface layer
• Soils that have more sand in the lower part of the subsoil
• Soils that have a seasonal high water table at a depth of less than 6 feet

Contrasting inclusions:
• The somewhat poorly drained Lawson soils in the lower positions on the landscape
• Soils that have a thin layer of light colored overwash

Use and Management

Cropland

Management concerns: Erosion
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
• Returning crop residue to the soil or regularly adding other organic material helps to maintain productivity and good tilth.

Dwellings

Management concerns: None
Management measures or considerations:
• Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
• Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIe

43A—Ipava silt loam, 0 to 2 percent slopes

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 40 acres

Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Loess
Runoff: Slow
Available water capacity: High
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: High
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—very dark grayish brown, friable silt loam

Subsurface layer:
8 to 20 inches—very dark brown and very dark grayish brown, friable or firm silt loam

Subsoil:
20 to 28 inches—dark grayish brown, firm silty clay
28 to 56 inches—dark yellowish brown and light brownish gray, mottled, firm silty clay loam

Substratum:
56 to 60 inches—light brownish gray, mottled, friable silt loam

Composition

Ipava and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a lighter colored subsurface layer
- Soils that have a thinner dark surface layer

Contrasting inclusions:
- The poorly drained Virden soils in depressions that are subject to ponding
- The moderately well drained Tama and Downs soils in the higher or more sloping positions on the landscape

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
- No major limitations affect the use of this soil for corn, soybeans, or small grain.
- The seasonal high water table may delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available.
- A system of conservation tillage that leaves crop residue on the surface after planting helps to maintain tilth and fertility.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Installing subsurface tile drains near the foundation helps to overcome the wetness.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness and the moderately slow permeability
Management measures or considerations:
- Subsurface tile drains help to lower the seasonal high water table.
- Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: I

43B—Ipava silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Gently sloping, broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 40 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Loess
Runoff: Medium
Available water capacity: High
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: High
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content

Shrink-swell potential: High
Potential for frost action: High

Typical Profile

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

Subsurface layer:
8 to 12 inches—very dark gray, firm silty clay loam

Subsoil:
12 to 41 inches—light olive brown and yellowish brown, mottled, firm silty clay loam
41 to 55 inches—yellowish brown, mottled, friable silt loam

Substratum:
55 to 60 inches—yellowish brown, mottled, friable silt loam

Composition

Ipava and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a lighter colored subsurface layer
- Soils that have a thinner dark surface layer

Contrasting inclusions:
- The poorly drained Virden soils in depressions that are subject to ponding
- The moderately well drained Tama and Downs soils in the higher or more sloping positions on the landscape

Use and Management

Cropland

Management concerns: Erosion and wetness
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion and maintain good tilth and productivity.
- In problem areas, excess water can be removed by surface ditches or subsurface drains.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains near the foundation helps to overcome the wetness.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness and the moderately slow permeability
Management measures or considerations:
- Subsurface tile drains help to lower the seasonal high water table.
- Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIe

46—Herrick silt loam

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Loess
Runoff: Slow
Available water capacity: High
Seasonal high water table: 1.5 to 3.0 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 11 inches—very dark gray, friable silt loam

Subsurface layer:
11 to 18 inches—dark gray, friable silt loam

Subsoil:
18 to 53 inches—grayish brown, mottled, firm silty clay loam

Substratum:
53 to 60 inches—yellowish brown, mottled, friable silt loam

Composition

Herrick and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a darker subsurface layer
- Soils that have a thinner surface layer

Contrasting inclusions:
- The poorly drained Virden soils in shallow depressions
- Poorly drained soils that have a thinner surface layer and thicker subsurface layer than the Herrick soil; in depressions that are subject to ponding

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
- A drainage system has been installed in most areas. Measures that maintain the drainage system are needed. Additional drainage may be needed in some areas. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available.
- Applying a system of conservation tillage that leaves crop residue on the surface after planting and returning crop residue to the soil maintain tilth, help to prevent surface compaction and crusting, and increase the rate of water infiltration.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains near the foundation helps to overcome the wetness.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness and the moderately slow permeability
Management measures or considerations:
- Onsite investigation is needed.
- Subsurface tile drains help to lower the seasonal high water table.
- Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIw

50—Virden silt loam

Setting

Position on the landform: Shallow depressions
Shape of areas: Irregular
Ponding: Occasionally ponded for brief periods during the spring
Size of areas: 5 to 60 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Loess
Runoff: Very slow or ponded
Available water capacity: High
Seasonal high water table: 0.5 foot above to 2.0 feet below the surface
Organic matter content: High
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—very dark brown, friable silt loam

Subsurface layer:
8 to 14 inches—very dark brown, very friable silt loam

Subsoil:
14 to 36 inches—very dark grayish brown and gray, mottled, firm silty clay loam
36 to 43 inches—gray, mottled, friable silt loam

Substratum:
43 to 60 inches—light gray, mottled, friable silt loam

Composition

Virden and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a surface layer of silty clay loam
- Soils that are dark to a depth of more than 24 inches
- Soils that have a lighter colored subsurface layer

Contrasting inclusions:
• The somewhat poorly drained Ipava and Herrick soils in the slightly higher positions on the landscape
• The somewhat poorly drained Clarksdale and Atterberry soils, which have a thinner surface layer than the Virden soil; in the slightly higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
• Measures that maintain the drainage system are needed. Additional drainage may be needed in some areas. Subsurface tile drains and surface inlet tile are suitable.
• Keeping tillage to a minimum and leaving crop residue on the surface after planting help to maintain productivity, improve tilth, and increase the rate of water infiltration.

Dwellings

Management concerns: Ponding, wetness, and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Ponding can be overcome by diverting surface water from the site or by constructing the building on raised fill material.
• Subsurface tile drains and surface inlet tile drains help to lower the water table.
• Reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness, ponding, and the moderately slow permeability
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains helps to lower the seasonal high water table.
• Grading and land shaping help to remove surface water.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIw

61—Atterberry silt loam

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 4 to 30 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Loess
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1.5 to 3.0 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—very dark grayish brown, very friable silt loam

Subsurface layer:
8 to 14 inches—dark grayish brown, friable silt loam

Subsoil:
14 to 35 inches—brown, mottled, friable silt loam and firm silty clay loam
35 to 49 inches—grayish brown, mottled, friable silt loam

Substratum:
49 to 60 inches—dark yellowish brown, mottled, friable silt loam

Composition

Atterberry and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil
• Soils that have a lighter colored surface layer

Contrasting inclusions:
• The moderately well drained Downs and Rozetta soils in the more sloping positions on the landscape
• Ipava and Herrick soils, which have a thicker dark

surface layer than the Atterberry soil; in the slightly lower positions on the landscape
• The poorly drained Virden soils in shallow depressions

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
• No major limitations affect the use of this soil for corn, soybeans, or small grain.
• The seasonal high water table may delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available.
• A system of conservation tillage that leaves crop residue on the surface after planting improves tilth and fertility.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains near the foundation helps to overcome the seasonal high water table.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Underground drains adjacent to the absorption field help to overcome the seasonal high water table.

Interpretive Groups

Land capability classification: I

75B—Drury silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Footslopes and fan terraces
Shape of areas: Long and narrow
Size of areas: 5 to 30 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Local alluvium
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 4 inches—dark brown, very friable silt loam

Subsurface layer:
4 to 16 inches—dark brown, very friable silt loam

Subsoil:
16 to 45 inches—dark yellowish brown, friable silt loam

Substratum:
45 to 60 inches—dark yellowish brown, friable silt loam

Composition

Drury and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a seasonal high water table within a depth of 6 feet
• Soils that have slopes of less than 2 percent
• Soils that have more clay in the subsoil
• Soils that have gravelly silt loam in the lower part of the subsoil
• Soils that have a darker surface layer

Contrasting inclusions:
• The poorly drained Twomile soils in the lower positions on the landscape
• The well drained Haymond soils on flood plains downslope from the Drury soil
• The somewhat excessively drained Elsah soils, which have gravel throughout; on flood plains downslope from the Drury soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
• Returning crop residue to the soil and adding

other organic material improve soil tilth.

Dwellings

Management concerns: None
• Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
• Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIe

75C—Drury silt loam, 5 to 10 percent slopes

Setting

Position on the landform: Footslopes and fan terraces
Shape of areas: Long and narrow
Size of areas: 5 to 35 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark brown, friable silt loam

Subsoil:
6 to 60 inches—dark yellowish brown and yellowish brown, friable silt loam

Composition

Drury and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a seasonal high water table within a depth of 6 feet
• Soils that have more clay in the subsoil
• Soils that have gravelly silt loam in the lower part of the subsoil
• Soils that have a darker surface layer

Contrasting inclusions:
• The well drained Haymond soils on flood plains downslope from the Drury soil
• The somewhat excessively drained Elsah soils, which have gravel throughout; on flood plains downslope from the Drury soil
• Soils that have a surface layer of gravelly silt loam

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Adapted forage and hay plants grow well on this soil.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or clipped until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Dwellings

Management concerns: None
• Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
• Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIIe

119D2—Elco silt loam, 10 to 15 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 35 acres
Major use: Pasture

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Parent material: 20 to 40 inches of loess and the underlying pedisediment and glacial till
Runoff: Rapid
Available water capacity: High
Seasonal high water table: 2.5 to 4.5 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown, friable silt loam

Subsoil:
5 to 22 inches—yellowish brown, firm silty clay loam
22 to 45 inches—yellowish brown, mottled, firm silty clay loam
45 to 60 inches—yellowish brown, mottled, very firm clay loam

Composition

Elco and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have water-worked sediments in the lower part of the subsoil
• Soils that have a surface layer of silty clay loam
• Soils that have more sand in the subsoil

Contrasting inclusions:
• The well drained Ursa soils, which have more clay in the subsoil than the Elco soil; in landscape positions downslope from the Elco soil
• The moderately well drained Rozetta soils, which formed entirely in loess; in landscape positions upslope from the Elco soil
• The somewhat poorly drained Blair soils at the heads of drainageways

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope, the shrink-swell potential, and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.

• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation helps to overcome the wetness.

Septic tank absorption fields

Management concerns: Wetness, slope, and the restricted permeability
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains higher on the side slopes than the absorption field helps to intercept seepage water and lower the water table.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 4A

119D3—Elco silty clay loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 35 acres
Major use: Pasture

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Parent material: 20 to 40 inches of loess and the underlying pedisediment and glacial till
Runoff: Medium
Available water capacity: High
Seasonal high water table: 2.5 to 4.5 feet below the surface
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—yellowish brown, firm silty clay loam

Subsoil:
5 to 43 inches—yellowish brown, firm silty clay loam
43 to 60 inches—yellowish brown, mottled, firm silty clay loam

Composition

Elco and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have glacial outwash in the lower part of the subsoil
• Soils that have a surface layer of silt loam
• Soils that have more sand in the subsoil

Contrasting inclusions:
• The well drained Ursa soils, which have more clay in the subsoil than the Elco soil; in landscape positions downslope from the Elco soil
• The moderately well drained Rozetta soils, which formed entirely in loess; in landscape positions upslope from the Elco soil
• The somewhat poorly drained Blair soils at the heads of drainageways

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
• Tilling when the soil is wet causes surface cloddiness and compaction and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Establishing pasture and hay crops helps to control erosion.
• Seedbed preparation is difficult on severely eroded side slopes where the subsoil is exposed. A no-till method of pasture renovation or seeding helps to control further erosion. The plants should not be grazed until they are sufficiently established.

• Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and help to prevent surface compaction and excessive runoff.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope, the shrink-swell potential, and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation helps to overcome the wetness.

Septic tank absorption fields

Management concerns: Wetness, slope, and the restricted permeability
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains higher on the side slopes than the absorption field helps to intercept seepage water and lower the water table.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

119E2—Elco silt loam, 15 to 25 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 35 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Parent material: 20 to 40 inches of loess and the underlying pedisediment and glacial till
Runoff: Rapid
Available water capacity: High
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown, friable silt loam

Subsoil:
6 to 11 inches—dark yellowish brown, friable silt loam
11 to 33 inches—dark yellowish brown, firm silty clay loam
33 to 60 inches—strong brown, mottled, firm silt loam and loam

Composition

Elco and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have water-worked sediments in the lower part of the subsoil
• Soils that have a surface layer of silty clay loam

Contrasting inclusions:
• The well drained Ursa and Hickory soils, which have a thinner mantle of loess than the Elco soil; in landscape positions downslope from the Elco soil
• The moderately well drained Rozetta soils, which formed entirely in loess; in landscape positions upslope from the Elco soil
• The somewhat poorly drained Blair soils at the heads of drainageways

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a permanent cover of pasture plants helps to control erosion.
• In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Erosion, slope, seedling mortality, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Slope and the restricted permeability
Management measures or considerations:
• Onsite investigation is needed.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4R

242A—Kendall silt loam, 0 to 2 percent slopes

Setting

Position on the landform: Terrace ridgetops
Shape of areas: Irregular
Size of areas: 5 to 35 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Loess and outwash
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in

moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown, friable silt loam

Subsurface layer:
10 to 16 inches—grayish brown, friable silt loam

Subsoil:
16 to 50 inches—yellowish brown and grayish brown, mottled, firm silty clay loam
50 to 60 inches—yellowish brown, mottled, firm silt loam

Composition

Kendall and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a darker surface layer
• Soils that have a seasonal high water table at a depth of more than 3 feet
• Soils that have more clay in the subsoil
• Soils that do not have outwash materials within a depth of 60 inches

Contrasting inclusions:
• Poorly drained soils in shallow depressions that are subject to ponding
• Sloping areas on terrace breaks that are subject to erosion

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• Measures that maintain the drainage system are needed. Improved drainage is needed in some areas. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available.
• Applying a system of conservation tillage that leaves crop residue on the surface after planting and returning crop residue to the soil improve tilth, help to prevent surface compaction and crusting, and increase the rate of water infiltration.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains near the foundation helps to overcome the seasonal high water table.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Underground drains adjacent to the absorption field help to overcome the seasonal high water table.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 4A

257A—Clarksdale silt loam, 0 to 2 percent slopes

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 55 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Loess
Runoff: Slow
Available water capacity: High
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in

moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown, friable silt loam

Subsurface layer:
9 to 12 inches—grayish brown, very friable silt loam

Subsoil:
12 to 45 inches—brown, grayish brown, and gray, mottled, firm silty clay loam
45 to 60 inches—gray, mottled, friable silt loam

Composition

Clarksdale and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a lighter colored surface layer

Contrasting inclusions:
- The somewhat poorly drained Herrick soils, which have a thicker surface layer than the Clarksdale soil; in positions on the landscape similar to those of the Clarksdale soil

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
- No major limitations affect the use of this soil for corn, soybeans, or small grain.
- The seasonal high water table may delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available.
- A system of conservation tillage that leaves crop residue on the surface after planting improves tilth and productivity.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains near the foundation helps to overcome the wetness.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness and the moderately slow permeability
Management measures or considerations:
- Onsite investigation is needed.
- Subsurface tile drains help to lower the seasonal high water table.
- Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: I

257B—Clarksdale silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 40 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Loess
Runoff: Medium
Available water capacity: High
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown, friable silt loam

Subsoil:
9 to 43 inches—grayish brown and light olive brown, mottled, firm silty clay loam
43 to 51 inches—light olive brown, mottled, friable silt loam

Substratum:
51 to 60 inches—light olive brown, mottled, friable silt loam

Composition

Clarksdale and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a lighter colored surface layer
- Soils that have a seasonal high water table at a depth of more than 3 feet

Contrasting inclusions:
- Blair soils in landscape positions downslope from the Clarksdale soil

Use and Management

Cropland

Management concerns: Erosion, tilth, and wetness
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion and improve tilth and productivity.
- In problem areas, excess water can be removed by surface ditches or subsurface drains.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains near the foundation helps to overcome the wetness.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness and the moderately slow permeability
Management measures or considerations:
- Onsite investigation is needed.
- Subsurface tile drains help to lower the seasonal high water table.
- Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.

Interpretive Groups

Land capability classification: IIe

264D3—El Dara sandy loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 150 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Glacial outwash
Runoff: Rapid
Available water capacity: Moderate
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 8 inches—dark brown, firm sandy loam

Subsoil:
8 to 33 inches—brown and yellowish brown, mottled, firm clay loam
33 to 55 inches—yellowish brown and light yellowish brown, mottled, firm sandy clay loam
55 to 60 inches—gray, mottled, firm sandy clay loam

Composition

El Dara and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a surface layer of clay loam
- Soils that have glacial till in the lower part of the subsoil and in the substratum
- Soils that have less clay and more sand in the subsoil

Contrasting inclusions:
- The somewhat poorly drained Blair soils at the heads of drainageways upslope from the El Dara soil
- Rozetta and Downs soils, which formed entirely in loess; in landscape positions upslope from the El Dara soil

Use and Management

Pasture and hay

Management concerns: Erosion

Management measures or considerations:
• Maintaining a permanent cover of pasture plants helps to control erosion.
• In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Wetness and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing tile drains near the foundation or installing interceptor drains on side slopes that are higher than the building helps to lower the water table in areas used for dwellings with basements.
• Cutting, filling, and land shaping help to overcome the slope.

Septic tank absorption fields

Management concerns: Wetness and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface interceptor tile drains higher on the side slopes than the absorption field helps to lower the water table.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4A

264E—El Dara fine sandy loam, 15 to 30 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 150 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Glacial outwash
Runoff: Rapid
Available water capacity: Moderate
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

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

Subsurface layer:
3 to 5 inches—brown, friable loam

Subsoil:
5 to 14 inches—yellowish brown, friable loam
14 to 42 inches—strong brown, firm clay loam and sandy clay loam
42 to 60 inches—strong brown, friable sandy loam

Composition

El Dara and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have a surface layer of silt loam
• Soils that have glacial till in the lower part of the subsoil and in the substratum

• Soils that have less clay and more sand in the subsoil

Contrasting inclusions:
• The somewhat poorly drained Blair soils at the heads of drainageways
• The well drained Seaton soils in landscape positions upslope from the El Dara soil
• The well drained Goss soils on the lower part of side slopes

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a permanent cover of pasture plants helps to control erosion.
• In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Erosion, the slope, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4R

264E2—El Dara fine sandy loam, 15 to 30 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 150 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Glacial outwash
Runoff: Rapid
Available water capacity: Moderate
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 4 inches—dark brown, friable fine sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown, friable fine sandy loam

Subsoil:
10 to 60 inches—dark yellowish brown and strong brown, friable fine sandy loam

Composition

El Dara and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a surface layer of silt loam
- Soils that have glacial till in the lower part of the subsoil and in the substratum
- Soils that have less clay and more sand in the subsoil

Contrasting inclusions:
- The somewhat poorly drained Blair soils at the heads of drainageways
- The well drained Seaton soils in landscape positions upslope from the El Dara soil
- The well drained Goss soils on the lower part of side slopes

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Maintaining a permanent cover of pasture plants helps to control erosion.
- In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Erosion, the slope, and plant competition

Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
- In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
- Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
- Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4R

264G—El Dara fine sandy loam, 30 to 50 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Glacial outwash
Runoff: Rapid
Available water capacity: Moderate
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

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

Subsurface layer:
3 to 5 inches—brown, friable loam

Subsoil:
5 to 14 inches—yellowish brown, friable loam
14 to 42 inches—strong brown, firm clay loam and sandy clay loam
42 to 60 inches—strong brown, friable sandy loam

Composition

El Dara and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a surface layer of silt loam
- Soils that have glacial till in the lower part of the subsoil and in the substratum
- Soils that have less clay and more sand in the subsoil

Contrasting inclusions:
- Seaton soils, which formed entirely in loess; in landscape positions upslope from the El Dara soil
- Goss soils, which formed in cherty limestone residuum; on the lower part of side slopes
- The excessively drained Sarpy soils, which are sandier than the El Dara soil; on flood plains downslope from the El Dara soil
- The somewhat excessively drained Elsah soils, which have gravel throughout; on flood plains downslope from the El Dara soil

Use and Management

Woodland

Management concerns: Erosion, the slope, and plant competition
Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
- In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
- Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
- Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
- Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
- Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 4R

271C3—Timula silt loam, 5 to 10 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 60 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown, friable silt loam

Subsoil:
7 to 22 inches—dark yellowish brown, friable silt loam

Substratum:
22 to 60 inches—light brownish gray, mottled, friable silt

Composition

Timula and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have carbonates closer to the surface

Contrasting inclusions:
- Fayette and Sylvan soils on ridgetops or side slopes upslope from the Timula soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, a crop rotation that is dominated by forage crops, and terraces help to control erosion.
- Returning crop residue to the soil and regularly adding other organic material improve tilth and increase the rate of water infiltration.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Adapted forage and hay plants grow well on this soil.
- A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

271D3—Timula silt loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 3 to 25 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown, friable silt loam

Subsurface layer:
7 to 11 inches—mixed dark yellowish brown and light brownish gray, friable silt loam

Substratum:
11 to 60 inches—light brownish gray, mottled, friable silt

Composition

Timula and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have carbonates closer to the surface

Contrasting inclusions:
- Fayette and Sylvan soils on ridgetops or side slopes upslope from the Timula soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
- Returning crop residue to the soil and regularly adding other organic material improve tilth and increase the rate of water infiltration.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
- A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

271E2—Timula silt loam, 15 to 30 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown, friable silt loam

Subsoil:
8 to 23 inches—dark yellowish brown and yellowish brown, friable silt loam

Substratum:
23 to 60 inches—yellowish brown, friable silt

Composition

Timula and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have carbonates closer to the surface

Contrasting inclusions:
- Fayette and Sylvan soils on ridgetops and side slopes upslope from the Timula soil
- The somewhat excessively drained Hamburg soils in landscape positions downslope from the Timula soil
- The moderately well drained Jules soils in frequently flooded drainageways downslope from the Timula soil
- The well drained Hickory and El Dara soils, which formed mostly in glacial drift; on the lower part of side slopes

Use and Management

Pasture and hay

Management concerns: Erosion

Management measures or considerations:
- Maintaining a permanent cover of pasture plants helps to control erosion.
- In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Erosion, slope, seedling mortality, and plant competition
Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
- In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
- Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
- Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4R

274B—Seaton silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Ridgetops
Shape of areas: Irregular
Size of areas: 3 to 80 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark brown, friable silt loam

Subsurface layer:
6 to 9 inches—brown, friable silt loam

Subsoil:
9 to 60 inches—brown and dark yellowish brown, friable silt loam

Composition

Seaton and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil
• Soils that have gray mottles in the lower part of the subsoil

Contrasting inclusions:
• Timula soils, which have less clay in the solum than the Seaton soil; in landscape positions downslope from the Seaton soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
• Returning crop residue to the soil and adding other organic material improve soil tilth.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: None
Management measures or considerations:
• Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
• Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 6A

274C2—Seaton silt loam, 5 to 10 percent slopes, eroded

Setting

Position on the landform: Side slopes and ridgetops
Shape of areas: Irregular or long and narrow
Size of areas: 5 to 150 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown, friable silt loam

Subsoil:
7 to 60 inches—dark yellowish brown and yellowish brown, friable silt loam

Composition

Seaton and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have mottles in the lower part of the subsoil
- Soils that have carbonates in the lower part of the subsoil
- Soils that are severely eroded

Contrasting inclusions:
- Timula soils, which have less clay in the solum than the Seaton soil; in landscape positions downslope from the Seaton soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
- Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Adapted forage and hay plants grow well on this soil.
- A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 6A

274C3—Seaton silt loam, 5 to 10 percent slopes, severely eroded

Setting

Position on the landform: Side slopes and ridgetops
Shape of areas: Irregular or long and narrow
Size of areas: 3 to 65 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—brown, friable silt loam

Subsoil:
5 to 44 inches—brown and dark yellowish brown, friable silt loam

Substratum:
44 to 60 inches—dark yellowish brown, friable silt loam

Composition

Seaton and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have carbonates in the lower part of the subsoil
- Soils that have mottles in the lower part of the subsoil

Contrasting inclusions:
- Timula soils, which have less clay in the solum than the Seaton soil; in landscape positions downslope from the Seaton soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
- Returning crop residue to the soil and regularly adding other organic material improve tilth and increase the rate of water infiltration.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Adapted forage and hay plants grow well on this soil.
- A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or clipped until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6A

274D2—Seaton silt loam, 10 to 15 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular or long and narrow
Size of areas: 3 to 65 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown, friable silt loam

Subsoil:
9 to 60 inches—yellowish brown and dark yellowish brown, friable or firm silt loam

Composition

Seaton and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have mottles in the lower part of the subsoil
- Soils that have carbonates in the lower part of the subsoil
- Soils that are severely eroded

Contrasting inclusions:
- Timula soils, which have less clay in the solum than the Seaton soil; in landscape positions downslope from the Seaton soil
- The somewhat excessively drained Hamburg soils in landscape positions downslope from the Seaton soil
- The well drained Lacrescent soils and bedrock escarpments in the steeper areas adjacent to bluffs

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
- Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
- A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or clipped until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 6A

274D3—Seaton silt loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular or long and narrow
Size of areas: 3 to 35 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—brown, friable silt loam

Subsoil:
5 to 44 inches—brown and dark yellowish brown, friable silt loam

Substratum:
44 to 60 inches—dark yellowish brown, friable silt loam

Composition

Seaton and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil
• Soils that have less clay in the surface layer
• Soils that have carbonates in the lower part of the subsoil
• Soils that have mottles in the lower part of the subsoil

Contrasting inclusions:
• Timula soils, which have less clay in the solum than the Seaton soil; in landscape positions downslope from the Seaton soil
• The somewhat excessively drained Hamburg soils in landscape positions downslope from the Seaton soil
• The well drained Lacrescent soils and bedrock escarpments on the steeper hillsides adjacent to bluffs

Use and Management

Cropland

Management concerns: Erosion
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material improve tilth and increase the rate of water infiltration.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or clipped until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch,

compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6A

274E—Seaton silt loam, 15 to 30 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 200 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—very dark grayish brown, friable silt loam

Subsurface layer:
6 to 9 inches—brown, friable silt loam

Subsoil:
9 to 60 inches—dark yellowish brown, friable silt loam

Composition

Seaton and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil
• Soils that have carbonates in the lower part of the profile
• Soils that have more clay in the surface layer

Contrasting inclusions:
• Goss soils, which have more clay and rock fragments throughout than the Seaton soil; in landscape positions downslope from the Seaton soil
• Haymond soils and the somewhat poorly drained Wakeland soils, which formed in alluvium; on flood plains downslope from the Seaton soil
• The somewhat excessively drained Hamburg soils in landscape positions downslope from the Seaton soil

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a permanent cover of pasture plants helps to control erosion.
• In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.

• Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 6R

274E2—Seaton silt loam, 15 to 30 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 200 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—very dark grayish brown, very friable silt loam

Subsoil:
6 to 60 inches—dark yellowish brown and yellowish brown, friable silt loam

Composition

Seaton and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil
• Soils that have carbonates in the lower part of the profile
• Soils that have more clay in the surface layer

Contrasting inclusions:
• Goss soils, which have more clay and rock fragments throughout than the Seaton soil; in landscape positions downslope from the Seaton soil
• Haymond soils and the somewhat poorly drained Wakeland soils, which formed in alluvium; on flood plains downslope from the Seaton soil
• The somewhat excessively drained Hamburg soils in landscape positions downslope from the Seaton soil

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a permanent cover of pasture plants helps to control erosion.
• In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.

• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 6R

274G—Seaton silt loam, 30 to 50 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 10 to 50 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—very dark grayish brown, friable silt loam

Subsurface layer:
6 to 9 inches—brown, friable silt loam

Subsoil:
9 to 60 inches—dark yellowish brown, friable silt loam

Composition

Seaton and similar soils: 85 to 88 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil
• Soils that have carbonates within a depth of 40 inches
• Soils that have redder colors in the subsoil

Contrasting inclusions:
• Goss soils, which have more clay and rock fragments throughout than the Seaton soil; in landscape positions downslope from the Seaton soil
• Haymond soils and the somewhat poorly drained

Wakeland soils, which formed in alluvium; on flood plains downslope from the Seaton soil
• The somewhat excessively drained Hamburg soils in landscape positions downslope from the Seaton soil
• Hickory and El Dara soils, which formed mostly in glacial till and outwash; on the lower part of side slopes

Use and Management

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 6R

278A—Stronghurst silt loam, 0 to 2 percent slopes

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 350 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Loess
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown, friable silt loam

Subsurface layer:
9 to 16 inches—pale brown, friable silt loam

Subsoil:
16 to 43 inches—brown and grayish brown, mottled, firm silty clay loam
43 to 50 inches—mottled light brownish gray and yellowish brown, friable silt loam

Substratum:
50 to 60 inches—mottled light brownish gray and yellowish brown, friable silt loam

Composition

Stronghurst and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a darker surface layer
- Soils that have a seasonal high water table at a depth of more than 3 feet
- Soils that have more clay in the subsoil

Contrasting inclusions:
- The moderately well drained Rozetta and well drained Fayette soils in the more sloping positions on the landscape
- Poorly drained soils in shallow depressions that are subject to ponding

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
- Measures that maintain the drainage system are needed. Improved drainage is needed in some areas. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available.
- Applying a system of conservation tillage that leaves crop residue on the surface after planting and returning crop residue to the soil improve tilth, help to prevent surface compaction and crusting, and increase the rate of water infiltration.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains near the foundation helps to overcome the seasonal high water table.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
- Onsite investigation is needed.
- Underground drains adjacent to the absorption field help to overcome the seasonal high water table.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 4A

278B—Stronghurst silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Broad ridgetops
Shape of areas: Irregular
Size of areas: 5 to 110 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown, friable silt loam

Subsoil:
7 to 48 inches—dark yellowish brown, mottled, firm silty clay loam

Substratum:
48 to 60 inches—yellowish brown, mottled, firm silt loam

Composition

Stronghurst and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a darker surface layer

- Soils that have more clay in the subsoil
- Soils that have slopes of more than 5 percent
- Soils that have a water table at a depth of more than 3 feet

Contrasting inclusions:
- The well drained Fayette and Sylvan soils in the more sloping positions on the landscape

Use and Management

Cropland

Management concerns: Erosion, wetness, and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
- In problem areas, excess water can be removed by surface ditches or subsurface drains.
- Returning crop residue to the soil and regularly adding other organic material minimize crusting and compaction and improve tilth.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains near the foundation helps to overcome the seasonal high water table.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
- Onsite investigation is needed.
- Underground drains adjacent to the absorption field help to overcome the seasonal high water table.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 4A

279B—Rozetta silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Ridgetops
Shape of areas: Irregular
Size of areas: 5 to 850 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam

Subsoil:
8 to 13 inches—brown, friable silt loam
13 to 33 inches—dark yellowish brown, firm silty clay loam
33 to 55 inches—yellowish brown, mottled, friable silt loam

Substratum:
55 to 60 inches—yellowish brown, mottled, friable silt loam

Composition

Rozetta and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a darker and thicker surface layer
- Soils that have a seasonal high water table at a depth of more than 6 feet
- Soils that have carbonates within a depth of 40 inches

Contrasting inclusions:
• The somewhat poorly drained Stronghurst soils in the less sloping positions on the landscape
• The somewhat poorly drained Blair soils in the more sloping landscape positions downslope from the Rozetta soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
• Returning crop residue to the soil and adding other organic material improve soil tilth.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains helps to lower the seasonal high water table.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 4A

279C2—Rozetta silt loam, 5 to 10 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 500 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—brown, friable silt loam

Subsoil:
8 to 24 inches—yellowish brown, firm silty clay loam
24 to 42 inches—yellowish brown, friable silt loam

Substratum:
42 to 57 inches—brown and dark yellowish brown, mottled, friable silt loam
57 to 60 inches—dark yellowish brown, mottled, friable silt loam

Composition

Rozetta and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have a darker and thicker surface layer
• Soils that have a seasonal high water table at a depth of more than 6 feet
• Soils that have carbonates within a depth of 40 inches
• Soils that have a surface layer of silty clay loam

Contrasting inclusions:
• The somewhat poorly drained Stronghurst soils in the less sloping positions on the landscape
• The moderately well drained Elco and somewhat

poorly drained Blair soils in the more sloping landscape positions downslope from the Rozetta soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Adapted forage and hay plants grow well on this soil.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
• Onsite investigation is needed.
• Installing subsurface tile drains helps to lower the seasonal high water table.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 4A

279C3—Rozetta silty clay loam, 5 to 10 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 20 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: High
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—yellowish brown, firm silty clay loam

Subsoil:
7 to 28 inches—dark yellowish brown, firm silty clay loam
28 to 41 inches—yellowish brown, mottled, friable silty clay loam

Substratum:
41 to 60 inches—dark yellowish brown, mottled, friable silt loam

Composition

Rozetta and similar soils: 85 to 88 percent

Inclusions

Similar inclusions:
- Soils that have a surface layer of silt loam
- Soils that have a seasonal high water table at a depth of more than 6 feet
- Soils that have carbonates within a depth of 40 inches
- Soils that have less clay in the subsoil

Contrasting inclusions:
- The somewhat poorly drained Stronghurst soils in the less sloping positions on the landscape
- The moderately well drained Elco and somewhat poorly drained Blair soils in the more sloping landscape positions downslope from the Rozetta soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
- Tilling when the soil is wet causes surface cloddiness and compaction and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion and tilth
Management measures or considerations:
- Establishing pasture plants or hay on this soil helps to control erosion.
- Overgrazing reduces forage yields and causes excessive runoff and erosion.
- Proper stocking rates and rotation grazing help to keep the pasture in good condition.
- Preparing a good seedbed is difficult on this soil because of surface crusting and cloddiness.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Wetness and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
- On sites for dwellings with basements, installing subsurface tile drains near the foundation lowers the water table.

Septic tank absorption fields

Management concerns: Wetness
Management measures or considerations:
- Onsite investigation is needed.
- Installing subsurface tile drains helps to lower the seasonal high water table.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

280B—Fayette silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Ridgetops
Shape of areas: Irregular
Size of areas: 5 to 300 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains

Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—brown, friable silt loam

Subsurface layer:
7 to 11 inches—dark yellowish brown, friable silt loam

Subsoil:
11 to 60 inches—dark yellowish brown, friable or firm silt loam and silty clay loam

Composition

Fayette and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that do not have a subsurface layer and that have material from the subsoil mixed into the surface layer
- Soils that have a darker and thicker surface layer
- Soils that have mottles in the lower part of the subsoil
- Soils that have less clay in the subsoil

Contrasting inclusions:
- The somewhat poorly drained Atterberry and Stronghurst soils in the less sloping positions on the landscape

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
- Returning crop residue to the soil and adding other organic material improve soil tilth.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 4A

280C2—Fayette silt loam, 5 to 10 percent slopes, eroded

Setting

Position on the landform: Side slopes and ridgetops
Shape of areas: Irregular
Size of areas: 5 to 70 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown, friable silt loam

Subsoil:
9 to 34 inches—yellowish brown, firm silty clay loam
34 to 60 inches—yellowish brown, firm or friable silt loam

Composition

Fayette and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have mottles in the lower part of the subsoil
- Soils that have carbonates within a depth of 40 inches
- Soils that have a surface layer of silty clay loam
- Soils that have less clay in the subsoil

Contrasting inclusions:
- The somewhat poorly drained Stronghurst soils in the less sloping positions on the landscape near the heads of drainageways
- The well drained Baylis soils, which contain more clay and chert fragments in the lower part of the profile than the Fayette soil; in landscape positions downslope from the Fayette soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
- Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Adapted forage and hay plants grow well on this soil.
- A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 4A

280C3—Fayette silty clay loam, 5 to 10 percent slopes, severely eroded

Setting

Position on the landform: Side slopes and ridgetops
Shape of areas: Irregular
Size of areas: 5 to 65 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown, friable silty clay loam

Subsoil:
6 to 40 inches—dark yellowish brown and yellowish brown, firm silty clay loam
40 to 53 inches—yellowish brown, friable silt loam

Substratum:
53 to 60 inches—yellowish brown, friable silt loam

Composition

Fayette and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have mottles in the lower part of the subsoil
- Soils that have carbonates within a depth of 40 inches
- Soils that have a surface layer of silt loam
- Soils that have less clay in the subsoil

Contrasting inclusions:
- The somewhat poorly drained Stronghurst soils in the less sloping positions on the landscape at the heads of drainageways
- Baylis soils, which have more clay and rock fragments in the lower part of the profile than the Fayette soil; in landscape positions downslope from the Fayette soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
- Tilling when the soil is wet causes surface cloddiness and compaction and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion and tilth
Management measures or considerations:
- Establishing pasture plants or hay on this soil helps to control erosion.
- Overgrazing reduces forage yields and causes excessive runoff and erosion.
- Proper stocking rates and rotation grazing help to keep the pasture in good condition.
- Preparing a good seedbed is difficult on this soil because of surface crusting and cloddiness.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

280D2—Fayette silt loam, 10 to 15 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 100 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in

moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—brown, very friable silt loam

Subsoil:
6 to 11 inches—dark yellowish brown, friable silt loam
11 to 44 inches—dark yellowish brown, firm or friable silty clay loam
44 to 60 inches—dark yellowish brown, friable silt loam

Composition

Fayette and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have redder colors in the lower part of the subsoil
• Soils that have carbonates within a depth of 40 inches
• Soils that have a surface layer of silty clay loam
• Soils that have less clay in the subsoil
• Soils that have gray mottles in the lower part of the subsoil

Contrasting inclusions:
• The somewhat poorly drained Wakeland soils, which formed in alluvium; on flood plains downslope from the Fayette soil
• Baylis soils, which have more clay and rock fragments in the lower part of the profile than the Fayette soil; in landscape positions downslope from the Fayette soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
• Tilling when the soil is wet causes surface cloddiness and compaction and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion and tilth
Management measures or considerations:
• Establishing pasture and hay crops helps to control erosion.
• Seedbed preparation is difficult on severely eroded side slopes where the subsoil is exposed. A no-till method of pasture renovation or seeding helps to control further erosion. The plants should not be grazed until they are sufficiently established.
• Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and help to prevent surface compaction and excessive runoff.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: 4A

280D3—Fayette silty clay loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 150 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: High
Organic matter content: Low
Erosion hazard: Severe
Tilth: Can be easily tilled only within a very narrow range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—brown, firm silty clay loam

Subsoil:
7 to 42 inches—dark yellowish brown, firm silty clay loam
42 to 60 inches—yellowish brown, friable silt loam

Composition

Fayette and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have redder colors in the lower part of the subsoil
- Soils that have carbonates within a depth of 40 inches
- Soils that have gray mottles in the lower part of the subsoil
- Soils that have a surface layer of silt loam
- Soils that have less clay in the subsoil

Contrasting inclusions:
- The somewhat poorly drained Wakeland soils, which formed in alluvium; on flood plains downslope from the Fayette soil
- Baylis soils, which have more clay and rock fragments in the lower part of the profile than the Fayette soil; in landscape positions downslope from the Fayette soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, and a crop rotation that is dominated by forage crops help to control erosion.
- Tilling when the soil is wet causes surface cloddiness and compaction and excessive runoff and erosion. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

Pasture and hay

Management concerns: Erosion and tilth
Management measures or considerations:
- Establishing pasture and hay crops helps to control erosion.
- Seedbed preparation is difficult on severely eroded side slopes where the subsoil is exposed. A no-till method of pasture renovation or seeding helps to control further erosion. The plants should not be grazed until they are sufficiently established.
- Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and help to prevent surface compaction and excessive runoff.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope and the shrink-swell potential

Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

280E2—Fayette silt loam, 15 to 30 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 120 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: High
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—brown, friable silt loam

Subsoil:
6 to 50 inches—dark yellowish brown, firm silty clay loam
50 to 60 inches—dark yellowish brown, firm silt loam

Composition

Fayette and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have carbonates within a depth of 40 inches
• Soils that have less clay in the subsoil
• Soils that have a surface layer of silty clay loam
• Soils that have slopes of more than 30 percent

Contrasting inclusions:
• The somewhat poorly drained Wakeland soils, which formed in alluvium; on flood plains downslope from the Fayette soil
• Goss soils, which have more clay and rock fragments than the Fayette soil; in landscape positions downslope from the Fayette soil
• Hickory soils, which formed mostly in glacial till; on the lower part of side slopes

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Establishing pasture and hay crops helps to control erosion.
• Overgrazing causes surface compaction and excessive runoff and increases the hazard of erosion. Proper stocking rates and deferred grazing help to prevent overgrazing.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion.
• The plants should not be grazed or clipped until they are sufficiently established.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Slope, erosion, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.

• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4R

386B—Downs silt loam, 2 to 5 percent slopes

Setting

Position on the landform: Ridgetops and side slopes
Shape of areas: Irregular
Size of areas: 5 to 250 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderate
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown, friable silt loam

Subsoil:
9 to 15 inches—brown, friable silt loam
15 to 24 inches—dark yellowish brown, friable silty clay loam
24 to 57 inches—yellowish brown and dark yellowish brown, mottled, friable silt loam

Substratum:
57 to 60 inches—brown, mottled, friable silt loam

Composition

Downs and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have slopes of less than 2 percent
• Soils that have a thinner and lighter colored surface layer
• Soils that have a dark surface layer more than 10 inches thick
• Soils that have less clay in the subsoil
• Soils that have carbonates within a depth of 40 inches

Contrasting inclusions:
• The somewhat poorly drained Clarksdale, Atterberry, and Ipava soils in the less sloping positions on the landscape

Use and Management

Cropland

Management concerns: Erosion
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.

• Returning crop residue to the soil or regularly adding other organic material helps to maintain productivity and tilth.

Dwellings

Management concerns: The shrink-swell potential and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Installing subsurface tile drains near the foundation helps to overcome the wetness in areas used for dwellings with basements.

Septic tank absorption fields

Management concerns: Wetness
• Onsite investigation is needed.
• Subsurface tile drains help to lower the water table.

Interpretive Groups

Land capability classification: IIe

386C2—Downs silt loam, 5 to 10 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 170 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loess
Runoff: Medium
Available water capacity: Very high
Seasonal high water table: 4 to 6 feet below the surface
Organic matter content: Moderate
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

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

Subsoil:
7 to 13 inches—dark yellowish brown, friable silt loam
13 to 33 inches—brown, firm silty clay loam
33 to 46 inches—dark yellowish brown, mottled, firm silt loam

Substratum:
46 to 60 inches—dark yellowish brown, mottled, firm silt loam

Composition

Downs and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a thicker surface layer
• Soils that have less clay in the subsoil

Contrasting inclusions:
• Rozetta soils and the well drained Fayette soils, which have a thinner and lighter colored surface layer than the Downs soil; in landscape positions downslope from the Downs soil
• The somewhat poorly drained Clarksdale soils in the less sloping landscape positions upslope from the Downs soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Adapted forage and hay plants grow well on this soil.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion.
• The plants should not be grazed or clipped until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-

season grasses include indiangrass, switchgrass, and little bluestem.

Dwellings

Management concerns: The shrink-swell potential and wetness
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Installing subsurface tile drains near the foundation helps to overcome the wetness in areas used for dwellings with basements.

Septic tank absorption fields

Management concerns: Wetness
• Onsite investigation is needed.
• Subsurface tile drains help to lower the water table.

Interpretive Groups

Land capability classification: IIIe

403G—Elizabeth very channery silt loam, 30 to 60 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Linear
Size of areas: 5 to 30 acres
Major use: Woodland (fig. 5)

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderate in the upper part and slow or moderately slow in the lower part
Parent material: Limestone bedrock
Runoff: Very rapid
Available water capacity: Very low
Organic matter content: Moderate
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown, friable very channery silt loam

Subsurface layer:
4 to 16 inches—dark brown, friable very channery silt loam

Substratum:
16 to more than 60 inches—limestone bedrock

Composition

Elizabeth and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have a lighter colored surface layer
• Soils that are more than 20 inches deep to bedrock
• Soils that have a thin subsoil above the bedrock

Contrasting inclusions:
• The well drained Goss soils, which have a lighter colored surface layer and more clay throughout than the Elizabeth soil and have limestone bedrock at a depth of more than 60 inches; in landscape positions upslope from the Elizabeth soil

Use and Management

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.
• Using harvesting methods that do not leave the remaining trees isolated or widely spaced and removing only high-value trees from a strip 50 feet wide along the western and southern edges of the woodland reduce the hazard of windthrow.

Figure 5.—A typical area of Elizabeth very channery silt loam, 30 to 60 percent slopes. This soil is used mainly as woodland.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIs
Woodland ordination symbol: 3R

430B—Raddle silt loam, 1 to 5 percent slopes

Setting

Position on the landform: Footslopes
Shape of areas: Long and narrow

Size of areas: 5 to 45 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Medium
Available water capacity: Very high
Organic matter content: Moderate
Erosion hazard: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface soil:
0 to 9 inches—very dark grayish brown, friable silt loam

Subsurface layer:
9 to 17 inches—dark brown, friable silt loam

Subsoil:
17 to 60 inches—brown, friable silt loam

Composition

Raddle and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a thicker surface layer

Contrasting inclusions:
- Haymond soils, which have a light colored surface layer; on flood plains downslope from the Raddle soil
- Drury soils, which have a light colored surface layer; in positions on the landscape similar to those of the Raddle soil
- Soils that have a surface layer of gravelly silt loam

Use and Management

Cropland

Management concerns: Erosion
Management measures or considerations:
- A system of conservation tillage that leaves crop residue on the surface after planting, terraces, or contour farming helps to control erosion.
- Returning crop residue to the soil or regularly adding other organic material helps to maintain productivity and tilth.

Dwellings

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Septic tank absorption fields

Management concerns: None
Management measures or considerations:
- Onsite investigation is needed.

Interpretive Groups

Land capability classification: IIe

472D2—Baylis silt loam, 10 to 15 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 150 acres
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: 20 to 40 inches of loess over cherty limestone residuum
Runoff: Medium
Available water capacity: Moderate
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown, friable silt loam

Subsurface layer:
5 to 10 inches—dark grayish brown, friable silty clay loam

Subsoil:
10 to 24 inches—dark brown, firm silty clay loam
24 to 60 inches—dark brown and dark yellowish brown, firm very cherty silty clay loam

Composition

Baylis and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that are deeper to cherty residuum

- Soils that have more clay in the subsoil
- Soils that have a lower content of gravel
- Soils that have a surface layer of silty clay loam

Contrasting inclusions:
- Fayette soils, which formed entirely in loess; in landscape positions upslope from the Baylis soil
- Goss soils, which have more clay and chert fragments in the upper part of the profile than the Baylis soil; in landscape positions downslope from the Baylis soil
- The somewhat poorly drained Blair soils in landscape positions similar to or upslope from the Baylis soil

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
- A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Seedling mortality and plant competition
Management measures or considerations:
- The seedling mortality rate can be reduced by planting species that are tolerant of excessive moisture.
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: Slope and the shrink-swell potential
Management measures or considerations:
- Onsite investigation is needed.
- Land shaping by cutting and filling helps to overcome the slope.
- Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4A

472E2—Baylis silt loam, 15 to 30 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 110 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: 20 to 40 inches of loess over cherty limestone residuum
Runoff: Rapid
Available water capacity: Moderate
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown, friable silt loam

Subsoil:
7 to 22 inches—dark yellowish brown and brown, firm silty clay loam
22 to 42 inches—yellowish red, firm silty clay loam
42 to 60 inches—yellowish red, very firm cherty silty clay loam

Composition

Baylis and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have bedrock at a depth of 40 to 60 inches
- Soils that have more clay or chert fragments in the subsoil
- Soils that have a thin layer of glacial drift above the limestone residuum
- Soils that have a surface layer of silty clay loam

Contrasting inclusions:
- Fayette soils, which formed entirely in loess; in landscape positions upslope from the Baylis soil
- Goss soils, which have more clay and chert fragments in the profile than the Baylis soil; in landscape positions downslope from the Baylis soil
- The somewhat excessively drained Elsah soils on flood plains downslope from the Baylis soil

Use and Management

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
- In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
- Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
- Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 4R

551E2—Gosport silt loam, 15 to 30 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 25 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Very slow
Parent material: Weathered shale residuum
Runoff: Rapid
Available water capacity: Moderate
Seasonal high water table: 1.5 to 3.0 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: High
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown, friable silt loam

Subsoil:
5 to 10 inches—yellowish brown, firm silty clay loam

10 to 28 inches—light olive brown, mottled, firm silty clay

Substratum:
28 to 60 inches—olive brown, mottled clay shale with strata of very dark gray lignite

Composition

Gosport and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a thinner surface layer
- Soils that are deeper to shale residuum
- Soils that have slopes of less than 30 percent

Contrasting inclusions:
- Haymond and Wakeland soils on flood plains adjacent to the Gosport soil
- The well drained Hickory soils, which formed mainly in glacial till; in positions on the landscape similar to those of the Gosport soil
- The well drained Fayette and Seaton soils, which formed entirely in loess; in landscape positions upslope from the Gosport soil

Use and Management

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
- In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
- Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
- Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
- Onsite investigation is needed.
- Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 2R

551G—Gosport silt loam, 30 to 60 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Long and narrow
Size of areas: 10 to 100 acres
Major uses: Woodland and habitat for wildlife

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Very slow
Parent material: Weathered shale residuum
Runoff: Rapid
Available water capacity: Moderate
Seasonal high water table: 1.5 to 3.0 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: High
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown, friable silt loam

Subsurface layer:
3 to 5 inches—yellowish brown, friable silt loam

Subsoil:
5 to 10 inches—yellowish brown, firm silty clay loam
10 to 28 inches—light olive brown, mottled, firm silty clay

Substratum:
28 to 60 inches—olive brown, mottled clay shale with strata of very dark gray lignite

Composition

Gosport and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a thinner surface layer
- Soils that are deeper to shale residuum
- Soils that have slopes of less than 30 percent

Contrasting inclusions:
- Haymond and Wakeland soils on flood plains adjacent to the Gosport soil
- The well drained Hickory soils, which formed mainly in glacial till; in positions on the landscape similar to those of the Gosport soil
- The well drained Fayette and Seaton soils, which formed entirely in loess; in landscape positions upslope from the Gosport soil

Use and Management

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
- In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
- Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
- Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
- Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
- Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 2R

605D2—Ursa silt loam, 10 to 15 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 15 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Slow
Parent material: Thin layer of loess and the underlying glacial till
Runoff: Rapid
Available water capacity: Moderate
Organic matter content: Moderately low

Erosion hazard: Severe
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: High
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 4 inches—dark brown, friable silt loam

Subsurface layer:
4 to 7 inches—dark yellowish brown, friable silt loam

Subsoil:
7 to 17 inches—dark yellowish brown and yellowish brown, mottled, firm silty clay loam
17 to 60 inches—yellowish brown, mottled, very firm silty clay

Composition

Ursa and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have more sand and less clay in the subsoil
• Soils that have a seasonal high water table within a depth of 6 feet

Contrasting inclusions:
• The somewhat poorly drained Blair soils in landscape positions upslope from the Ursa soil
• The moderately well drained Elco soils, which have less clay in the subsoil than the Ursa soil; in landscape positions upslope from the Ursa soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
• A system of conservation tillage that leaves crop residue on the surface after planting, a crop rotation that is dominated by forage crops, and terraces help to control erosion.
• Returning crop residue to the soil and regularly adding other organic material improve tilth and increase the rate of water infiltration.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a cover of grasses and legumes improves tilth and helps to control erosion.
• A no-till method of seeding or pasture renovation helps to establish forage species and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
• Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Dwellings

Management concerns: The shrink-swell potential and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Cutting, filling, and land shaping help to overcome the slope.

Septic tank absorption fields

Management concerns: The slow permeability and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 4A

605D3—Ursa silty clay loam, 10 to 15 percent slopes, severely eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 15 acres
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Slow
Parent material: Glacial till
Runoff: Rapid
Available water capacity: Moderate
Organic matter content: Low
Tilth: Can be easily tilled only within a very narrow range in moisture content
Erosion hazard: Severe
Tilth: Poorly suited
Shrink-swell potential: High
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 5 inches—dark brown, firm silty clay loam

Subsoil:
5 to 55 inches—strong brown, mottled, very firm clay loam
55 to 60 inches—strong brown and grayish brown, firm clay loam

Composition

Ursa and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a seasonal high water table within a depth of 6 feet

Contrasting inclusions:
- Hickory soils, which have less clay in the subsoil than the Ursa soil; in positions on the landscape similar to those of the Ursa soil
- The somewhat poorly drained Blair soils in landscape positions upslope from the Ursa soil

Use and Management

Cropland

Management concerns: Erosion and tilth
Management measures or considerations:
- A crop rotation that includes 1 or more years of forage crops, a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion.
- Returning crop residue to the soil and regularly adding other organic material help to maintain productivity, help to prevent crusting, and improve tilth.

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Establishing pasture and hay crops helps to control erosion.
- Seedbed preparation is difficult on severely eroded side slopes where the subsoil is exposed. A no-till method of pasture renovation or seeding helps to control further erosion. The plants should not be grazed until they are sufficiently established.
- Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and help to prevent surface compaction and excessive runoff.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- The competition from undesirable vegetation in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent reduction or destruction of the leaf mulch, compaction of the soil, damage to tree roots, and the uprooting or destruction of desirable young trees.
- Protection from fire is needed to prevent injury to both young and old trees and to prevent the destruction of the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
- Grain, seed crops, and grasses and legumes, such as bromegrass, orchardgrass, ladino clover, alsike clover, and red clover, can be grown along with the wild herbaceous plants that provide food and cover for openland wildlife.
- Food plots of grain or seed crops should be planted on the contour.
- Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: The shrink-swell potential and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Cutting, filling, and land shaping help to overcome the slope.

Septic tank absorption fields

Management concerns: The slow permeability and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4A

605E2—Ursa silt loam, 15 to 20 percent slopes, eroded

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 25 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Slow
Parent material: Thin layer of loess and the underlying glacial till
Runoff: Rapid
Available water capacity: Moderate
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: High
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 8 inches—dark brown, very friable silt loam

Subsurface layer:
8 to 12 inches—dark yellowish brown, friable silty clay loam

Subsoil:
12 to 60 inches—dark yellowish brown and yellowish brown, friable and firm clay loam

Composition

Ursa and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have less clay in the subsoil
• Soils that are shallower to glacial till
• Soils that have shale residuum in the lower part of the subsoil below the glacial till

Contrasting inclusions:
• Hickory soils, which have less clay in the solum than the Ursa soil; in positions on the landscape similar to those of the Ursa soil
• The moderately well drained Gosport soils, which formed in weathered shale residuum; in landscape positions downslope from the Ursa soil

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
• Maintaining a permanent cover of pasture plants helps to control erosion.
• In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion. The plants should not be grazed or harvested until they are sufficiently established.
• Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Erosion, slope, seedling mortality, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and

winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope and the shrink-swell potential
Management measures or considerations:
• Onsite investigation is needed.
• Land shaping by cutting and filling helps to overcome the slope.
• Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Management concerns: The slow permeability and the slope
Management measures or considerations:
• Onsite investigation is needed.
• Enlarging the filter field or replacing the soil with more permeable material helps to overcome the restricted permeability.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 4R

606E—Goss gravelly silt loam, 15 to 30 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Major uses: Woodland and pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum derived from cherty limestone or cherty dolomite and some interbedded shale
Runoff: Rapid
Available water capacity: Low
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown, friable gravelly silt loam

Subsoil:
5 to 24 inches—grayish brown, friable gravelly silt loam
24 to 42 inches—brown, firm very gravelly and extremely gravelly silt loam
42 to 60 inches—yellowish red extremely gravelly silty clay

Composition

Goss and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have slopes of less than 15 percent
• Soils that have less clay and a lower content of rock fragments in the subsoil
• Soils that have shale residuum in the lower part of the subsoil

Contrasting inclusions:
• The somewhat excessively drained Elizabeth soils, which have a darker surface layer than the Goss soil

and are shallow to bedrock; in landscape positions downslope from the Goss soil
• The well drained Baylis soils, which have a thin mantle of loess; in landscape positions upslope from the Goss soil
• The well drained Seaton soils, which have less clay throughout than the Goss soil and do not have coarse fragments in the profile
• The somewhat excessively drained Elsah soils, which formed in cherty alluvium; on narrow flood plains downslope from the Goss soil

Use and Management

Woodland

Management concerns: Slope, erosion, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Cutting, filling, and land shaping help to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing filter lines on the contour or cutting and land shaping help to overcome the slope.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 3R

606G—Goss gravelly silt loam, 30 to 60 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Cherty limestone residuum
Runoff: Very rapid
Available water capacity: Low
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 5 inches—dark brown, friable gravelly silt loam

Subsoil:
5 to 13 inches—brown, firm extremely gravelly silty clay loam
13 to 60 inches—yellowish red, firm gravelly to extremely gravelly silty clay

Composition

Goss and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have slopes of more than 60 percent
• Soils that have slopes of less than 30 percent
• Soils that have less clay and a lower content of rock fragments in the subsoil
• Soils that have shale residuum in the lower part of the subsoil

Contrasting inclusions:
• The somewhat excessively drained Elizabeth soils, which have a darker surface layer than the Goss soil and are shallow to bedrock; in landscape positions downslope from the Goss soil
• Baylis soils, which have a thin mantle of loess; in landscape positions upslope from the Goss soil
• Seaton soils, which have less clay throughout than the Goss soil and do not have coarse fragments in the profile; in landscape positions upslope from the Goss soil
• The somewhat excessively drained Elsah soils, which formed in cherty alluvium; on narrow flood plains downslope from the Goss soil

Use and Management

Woodland

Management concerns: Slope, erosion, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 3R

785G—Lacrescent channery silt loam, 30 to 70 percent slopes

Setting

Position on the landform: Side slopes
Shape of areas: Linear
Size of areas: 5 to 125 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate in the upper part and moderately rapid in the lower part
Parent material: Colluvium
Runoff: Very rapid
Available water capacity: Low
Organic matter content: High
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 7 inches—very dark gray, friable channery silt loam

Subsurface layer:
7 to 21 inches—very dark gray, friable gravelly silt loam

Subsoil:
21 to 38 inches—dark brown, friable very gravelly silt loam

Substratum:
38 to 60 inches—dark yellowish brown, friable very flaggy silt loam

Composition

Lacrescent and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have slopes of less than 30 percent

Contrasting inclusions:
• The somewhat excessively drained Elizabeth soils, which are shallow to bedrock; in positions on the landscape similar to those of the Lacrescent soil
• Limestone bedrock escarpments in landscape positions upslope from the Lacrescent soil

Use and Management

Woodland

Management concerns: Slope, erosion, and plant competition
Management measures or considerations:
• The slope limits the use of equipment and increases the hazard of erosion.
• Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
• The use of machinery is limited to periods when the soil is firm enough to support the equipment.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Slope
Management measures or considerations:
• In wooded areas this soil provides habitat for deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Slope
• Because of the slope, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 3R

815—Udorthents, silty

Setting

Position on the landform: Settling basins
Shape of areas: Irregular
Size of areas: 30 to 450 acres
Slope range: 1 to 4 percent
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow or moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Organic matter content: Low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 11 inches—brown, friable silt loam

Substratum:
11 to 20 inches—brown, mottled, friable silt loam
20 to 60 inches—brown, mottled, friable silt loam with thin strata of fine sandy loam

Composition

Udorthents and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more sand or gravel in the lower part of the substratum

Contrasting inclusions:
• The somewhat poorly drained Orion soils in the slightly lower positions on the landscape
• The excessively drained Sarpy soils on rises

Use and Management

Cropland

Management concerns: Tilth
Management measures or considerations:
• No major limitations affect the use of these soils for corn, soybeans, or small grain.
• A system of conservation tillage that leaves crop residue on the surface after planting improves tilth and productivity.

Dwellings

Management concerns:
• Onsite investigation is needed to determine the suitability of the soils for this use.

Septic tank absorption fields

Management concerns:
• Onsite investigation is needed to determine the suitability of the soils for this use.

Interpretive Groups

Land capability classification: I

864—Pits, quarries

Setting

Landscape: Uplands
Position on the landform: Hillsides
Shape of areas: Square or rectangular
Size of areas: 3 to 75 acres
Major use: Mining limestone for use in agriculture and in construction
Other features: Most of the quarries are active.

Composition

Pits, quarries, and similar inclusions: 90 to 95 percent

Inclusions

Similar inclusions:
• Stockpiles of stone and debris

Contrasting inclusions:
• Areas of undisturbed soils, including the well drained Goss, Lacrescent, and Elizabeth soils

Use and Management

• Onsite investigation is required to determine the suitability of these areas for specific uses.

865—Pits, gravel

Setting

Landscape: Uplands and flood plains
Shape of areas: Square or rectangular
Size of areas: 3 to 40 acres
Major use: Mining sand and gravel for use in construction
Other features: Some areas of this unit are idle land.

Composition

Pits, gravel, and similar inclusions: 85 to 90 percent

Inclusions

Similar inclusions:
• Stockpiles of sand, gravel, and debris

Contrasting inclusions:
• Areas of undisturbed soils, including the well drained El Dara soils in upland areas and the somewhat excessively drained Elsah and somewhat poorly drained Wakeland soils on flood plains
• Areas of water

Use and Management

• Onsite investigation is required to determine the suitability of these areas for specific uses.

937E—Seaton-Hickory complex, 15 to 30 percent slopes

Setting

Position on the landform: Seaton—upper side slopes; Hickory—lower side slopes
Shape of areas: Long and narrow
Size of areas: 4 to 100 acres
Major use: Woodland

Soil Properties and Qualities

Seaton

Drainage class: Well drained
Permeability: Moderate
Parent material: Loess
Runoff: Rapid
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Low
Potential for frost action: High

Hickory

Drainage class: Well drained
Permeability: Moderate
Parent material: Glacial till
Runoff: Rapid
Available water capacity: High
Organic matter content: Moderately low
Erosion hazard: Severe
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Seaton

Surface layer:
0 to 6 inches—very dark grayish brown, friable silt loam

Subsurface layer:
6 to 9 inches—brown, friable silt loam

Subsoil:
9 to 60 inches—dark yellowish brown, friable silt loam

Hickory

Surface layer:
0 to 3 inches—dark brown, friable loam

Subsurface layer:
3 to 7 inches—brown, friable loam

Subsoil:
7 to 23 inches—yellowish brown, firm loam
23 to 60 inches—strong brown, firm clay loam

Composition

Seaton and similar soils: 40 to 55 percent
Hickory and similar soils: 35 to 45 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the surface layer
- Soils that have clayey shale residuum in the lower part of the subsoil below the glacial till
- Soils that have carbonates in the lower part of the profile

Contrasting inclusions:
- Goss soils, which have more clay and chert fragments than the Hickory soil; on the lower side slopes downslope from the Hickory soil
- Gosport soils, which have shale bedrock within a depth of 40 inches; downslope from the Hickory soil
- Haymond soils and the somewhat poorly drained Wakeland soils, which formed in alluvium; on flood plains downslope from the Seaton soil
- The somewhat excessively drained Hamburg soils in positions on the landscape similar to those of the Seaton soil

Use and Management

Pasture and hay

Management concerns: Erosion
Management measures or considerations:
- Maintaining a permanent cover of pasture plants helps to control erosion.
- In areas where the pasture is established, seeding legumes on the contour with a no-till seeder improves the forage quality and helps to control erosion.
- The plants should not be grazed or clipped until they are sufficiently established.
- Proper stocking rates, rotation grazing, deferred grazing, and applications of fertilizer help to keep the pasture in good condition.
- Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Slope, erosion, seedling mortality, and plant competition
Management measures or considerations:
- The slope limits the use of equipment and increases the hazard of erosion.
- Placing logging roads and skid trails on or near the contour, skidding logs or trees uphill with a cable and winch, using grass firebreaks, and seeding bare areas to grass or to a grass-legume mixture after logging has been completed help to control erosion.
- The use of machinery is limited to periods when the soil is firm enough to support the equipment.
- Planting mature stock and clearing all vegetation within 2 feet of the planted seedlings reduce the seedling mortality rate. Some replanting may be necessary.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management concerns: Erosion
Management measures or considerations:
- In wooded areas these soils provide habitat for

deer, wild turkey, squirrels, and other woodland wildlife.
• Food plots of grain or seed crops should be established only in the less sloping areas and should be planted on the contour.
• Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food and cover for wildlife.

Dwellings

Management concerns: The shrink-swell potential and the slope
Management measures or considerations:
• Onsite investigation is needed.
• In areas of the Hickory soil, extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage caused by shrinking and swelling.
• Land shaping by cutting and filling helps to overcome the slope.

Septic tank absorption fields

Management concerns: Slope
Management measures or considerations:
• Onsite investigation is needed.
• Installing the filter lines on the contour or land shaping by cutting and filling helps to overcome the slope.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: Seaton—6R; Hickory—5R

3028—Jules silt loam, frequently flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 5 to 200 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 3.5 to 6.0 feet below the surface
Organic matter content: Moderately low
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown, friable silt loam

Subsurface layer:
6 to 14 inches—dark yellowish brown, friable silt loam

Substratum:
14 to 24 inches—dark yellowish brown, friable silt loam
24 to 60 inches—stratified dark yellowish brown, dark grayish brown, and pale brown, friable silt loam

Composition

Jules and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have carbonates closer to the surface
• Soils that have a darker surface layer
• Soils that have more sand or gravel in the lower part of the substratum

Contrasting inclusions:
• The somewhat poorly drained Wakeland and Orion soils in the slightly lower positions on the landscape
• The well drained Drury soils on footslopes

Use and Management

Cropland

Management concerns: Flooding and tilth
Management measures or considerations:
• Wetness caused by flooding may delay planting in some years.
• Surface drains or diversions can reduce the extent of crop damage caused by floodwater.
• Keeping tillage to a minimum and returning crop residue to the soil improve tilth and productivity.
• Avoiding fall cultivation and establishing grass strips in critical areas help to control scouring and erosion during floods.

Woodland

Management concerns: Seedling mortality and plant competition
Management measures or considerations:
• The seedling mortality rate can be reduced by

planting nursery stock that is larger than normal, by planting in furrows, and by mulching.
• Competing vegetation can be controlled by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

3070—Beaucoup silt loam, frequently flooded

Setting

Position on the landform: Shallow depressions
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Brief
Ponding: Frequent for brief periods throughout the year
Size of areas: 10 to 80 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: 0.5 foot above to 1.0 foot below the surface
Organic matter content: High
Erosion hazard: None or slight
Tilth: Can be easily tilled only within a limited range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—black, friable silt loam

Subsurface layer:
7 to 11 inches—black, firm silt loam

Subsoil:
11 to 18 inches—black, firm silty clay loam
18 to 60 inches—dark gray and dark grayish brown, mottled, firm silty clay loam

Composition

Beaucoup and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have less clay in the subsoil
• Soils that have a surface layer and subsurface layer more than 24 inches thick
• Soils that are underlain by sandier material
• Soils that have more clay in the subsoil

Contrasting inclusions:
• The poorly drained Ambraw soils, which contain more sand in the subsoil than the Beaucoup soil
• Undrained areas that are occasionally ponded for periods long enough to cause crop damage

Use and Management

Cropland

Management concerns: Flooding, wetness, and tilth
Management measures or considerations:
• Wetness caused by flooding and the seasonal high water table delays planting in most years.
• Surface drains or diversions reduce the extent of crop damage caused by floodwater.
• Varieties that are adapted to a shorter growing season and wetter soil conditions should be selected.
• Surface inlet tile functions satisfactorily if suitable outlets are available.
• Tilling when the soil is wet causes surface compaction and cloddiness. Keeping tillage to a minimum and returning crop residue to the soil help to prevent compaction and improve tilth.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw
Woodland ordination symbol: 5W

3070L—Beaucoup silt loam, frequently flooded, long duration

Setting

Position on the landform: Shallow depressions
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Long
Ponding: Frequent for long periods throughout the year
Size of areas: 10 to 200 acres
Major use: Wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: 0.5 foot above to 1.0 foot below the surface
Organic matter content: High
Erosion hazard: None or slight
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—black, friable silt loam

Subsurface layer:
7 to 11 inches—black, firm silt loam

Subsoil:
11 to 18 inches—black, firm silty clay loam
18 to 60 inches—dark gray and dark grayish brown, mottled, firm silty clay loam

Composition

Beaucoup and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a surface layer and subsurface layer that are more than 24 inches thick
- Soils that are underlain by sandier material
- Soils that have more clay in the subsoil

Contrasting inclusions:
- The poorly drained Ambraw soils, which contain more sand in the subsoil than the Beaucoup soil

Use and Management

Wildlife habitat

Management measures or considerations:
- This map unit is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: Vw
Woodland ordination symbol: 5W

3071L—Darwin silty clay loam, frequently flooded, long duration

Setting

Position on the landform: Depressions
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Long
Ponding: Frequent for long periods throughout the year

Size of areas: 5 to 20 acres
Major use: Wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Very slow
Parent material: Alluvium
Runoff: Slow to ponded
Available water capacity: Moderate
Seasonal high water table: 1 foot above to 1 foot below the surface
Organic matter content: High
Erosion hazard: None
Shrink-swell potential: Very high
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 13 inches—very dark gray, firm silty clay loam

Subsoil:
13 to 48 inches—dark gray, mottled, firm silty clay
48 to 60 inches—dark gray, mottled, firm silty clay loam

Composition

Darwin and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a surface layer and subsurface layer more than 24 inches thick
- Soils that are more acid in the subsoil

Contrasting inclusions:
- Beaucoup soils, which contain less clay than the Darwin soil; in high positions on the landscape
- The somewhat poorly drained Dupo soils, which have light colored silty overwash above a buried soil; in the higher positions on landscape
- The somewhat poorly drained Orion soils, which have less clay in the subsoil than the Darwin soil; in the higher positions on the landscape

Use and Management

Wildlife habitat

Management measures or considerations:
- This soil is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: Vw
Woodland ordination symbol: 5W

3092—Sarpy loamy sand, frequently flooded

Setting

Position on the landform: Swells
Shape of areas: Long and narrow
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 5 to 25 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Excessively drained
Permeability: Rapid
Parent material: Alluvium
Runoff: Slow
Available water capacity: Low
Organic matter content: Low
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: Low

Typical Profile

Surface layer:
0 to 10 inches—dark yellowish brown, very friable loamy sand

Substratum:
10 to 60 inches—yellowish brown, loose sand with strata of loamy sand

Composition

Sarpy and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a darker surface layer
- Soils that have more clay in the subsoil
- Soils that have up to 10 inches of light colored overwash

Contrasting inclusions:
- The well drained Haymond soils, which have less sand throughout than the Sarpy soil; in landscape positions similar to those of the Sarpy soil
- The somewhat excessively drained Elsah soils, which contain more rock fragments throughout than the Sarpy soil; in landscape positions similar to those of the Sarpy soil

Use and Management

Cropland

Management concerns: Low available water capacity, flooding, and tilth
Suitability: Poorly suited
Management measures or considerations:
- Short-season or drought-tolerant varieties are best suited to this soil.
- Crop damage from flooding may occur in some years.
- Diversions can reduce the extent of crop damage caused by floodwater.
- Avoiding fall cultivation and establishing grass strips in critical areas help to control scouring and erosion during floods.
- Using a system of conservation tillage that leaves crop residue on the surface after planting and regularly adding other organic material help to control soil blowing, improve tilth, and conserve moisture.

Pasture and hay

Management concerns: Low available water capacity, excessive leaching of nutrients, and soil blowing
Management measures or considerations:
- Selecting drought-tolerant grasses and legumes for planting can help to maintain or improve forage stands.
- Applying fertilizer frequently and in small amounts helps to prevent excessive loss of plant nutrients through leaching.
- Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition and help to control soil blowing.
- Suitable species include bromegrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IVs

3092L—Sarpy loamy sand, frequently flooded, long duration

Setting

Position on the landform: Swells
Shape of areas: Long and narrow
Flooding frequency: Frequent
Flooding duration: Long
Size of areas: 5 to 25 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Excessively drained
Permeability: Rapid
Parent material: Alluvium
Runoff: Slow
Available water capacity: Low
Organic matter content: Low
Shrink-swell potential: Low
Potential for frost action: Low

Typical Profile

Surface layer:
0 to 10 inches—dark yellowish brown, very friable loamy sand

Substratum:
10 to 60 inches—yellowish brown, loose sand with strata of loamy sand

Composition

Sarpy and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a darker surface layer
- Soils that have more clay in the subsoil
- Soils that have up to 10 inches of light colored overwash

Contrasting inclusions:
- The well drained Haymond soils, which have less sand throughout than the Sarpy soil; in landscape positions similar to those of the Sarpy soil
- The somewhat excessively drained Elsah soils, which contain more rock fragments throughout than the Sarpy soil; in landscape positions similar to those of the Sarpy soil

Use and Management

Woodland

Management concerns: Plant competition
Management measures or considerations:
- Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Measures that protect the woodland from fire are needed.

Wildlife habitat

Management measures or considerations:
- This soil is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IVs
Woodland ordination symbol: 3S

3302—Ambraw silty clay loam, sandy substratum, frequently flooded

Setting

Position on the landform: Abandoned stream meanders and depressions
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 5 to 570 acres
Major use: Wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Ponded
Available water capacity: High
Seasonal high water table: At the surface to 2 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 4 inches—very dark gray, firm silty clay loam

Subsurface layer:
4 to 20 inches—very dark gray, firm silty clay loam

Subsoil:
20 to 30 inches—dark gray, firm clay loam

Substratum:
30 to 62 inches—mixed gray, dark gray, and very dark gray, mottled, very friable, stratified loamy sand and sandy loam
62 to 72 inches—light gray, loose loamy sand

Composition

Ambraw and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that are deeper to the underlying sandy material
- Soils that have up to 15 inches of light colored overwash

Contrasting inclusions:
• Titus soils, which have more clay throughout than the Ambraw soil; in positions on the landscape similar to those of the Ambraw soil

Use and Management

Woodland

Management concerns: Seedling mortality, windthrow, and plant competition
Management measures or considerations:
• The use of equipment is limited to periods when the soil is firm.
• Planting mature stock and planting on ridges reduce the seedling mortality rate.
• Using a harvesting method that does not leave the remaining trees isolated or widely spaced and removing only high-value trees from a strip 50 feet wide along the western and southern edges of the woodland reduce the hazard of windthrow.
• The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
• Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Protection from fire prevents injury to trees and maintains the leaf mulch.

Wildlife habitat

Management measures or considerations:
• This soil is in areas on the flood plains along the Illinois and Mississippi Rivers. These areas provide habitat for game fish and a water supply for other wildlife. Shallow water areas generally are available or can easily be developed.
• Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.
• During periods when it is ponded, this soil furnishes temporary feeding and resting sites for waterfowl.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: Vw

Woodland ordination symbol: 5W

3302L—Ambraw silty clay loam, frequently flooded, long duration

Setting

Position on the landform: Abandoned stream channels and depressions
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Long
Ponding: Frequent for long periods throughout the year
Size of areas: 5 to 370 acres
Major use: Wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderately slow or moderate
Parent material: Alluvium
Runoff: Ponded
Available water capacity: High
Seasonal high water table: 1 foot above to 1 foot below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 4 inches—very dark gray, firm silty clay loam

Subsurface layer:
4 to 20 inches—very dark gray, firm silty clay loam

Subsoil:
20 to 30 inches—dark gray, firm clay loam

Substratum:
30 to 60 inches—mixed gray, dark gray, and very dark gray, mottled, very friable, stratified loamy sand and sandy loam

Composition

Ambraw and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that are deeper to the underlying sandy material
• Soils that have up to 15 inches of light colored overwash

Contrasting inclusions:
• Titus soils, which have more clay throughout than the Ambraw soil; in positions on the landscape similar to those of the Ambraw soil

Use and Management

Wildlife habitat

Management measures or considerations:
• This soil is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat for game fish and a water supply for other wildlife. Shallow water areas generally are available or can easily be developed.
• Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.
• During periods when it is ponded, this soil furnishes temporary feeding and resting sites for waterfowl.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: Vw

3331—Haymond silt loam, frequently flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 5 to 200 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Organic matter content: Moderately low
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—dark brown, friable silt loam

Subsoil:
9 to 40 inches—dark brown and brown, friable silt loam

Substratum:
40 to 60 inches—brown, mottled, friable silt loam

Composition

Haymond and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have carbonates in the substratum
• Soils that have a seasonal high water table at a depth of 3 to 6 feet
• Soils that have more clay in the subsoil

Contrasting inclusions:
• The somewhat poorly drained Wakeland and Orion soils in the slightly lower positions on the landscape
• The excessively drained Sarpy soils, which are sandier than the Haymond soil; in the slightly higher positions on the landscape
• The somewhat excessively drained Elsah soils, which have gravel throughout and are closer to stream channels than the Haymond soil

Use and Management

Cropland

Management concerns: Flooding and tilth
Management measures or considerations:
• Wetness caused by flooding may delay planting in some years.
• Surface drains or diversions can reduce the extent of crop damage caused by floodwater.
• Keeping tillage to a minimum and returning crop residue to the soil improve tilth and productivity.
• Avoiding fall cultivation and establishing grass strips in critical areas help to control scouring and erosion during floods.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.

• Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 8A

3331L—Haymond silt loam, frequently flooded, long duration

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Long
Size of areas: 5 to 80 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Organic matter content: Moderately low
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—dark brown, friable silt loam

Subsoil:
9 to 40 inches—dark brown and brown, friable silt loam

Substratum:
40 to 60 inches—brown, friable silt loam

Composition

Haymond and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have carbonates in the substratum
• Soils that have a seasonal high water table at a depth of 3 to 6 feet
• Soils that have more clay in the subsoil

Contrasting inclusions:
• The somewhat poorly drained Wakeland and Orion soils in the slightly lower positions on the landscape
• The excessively drained Sarpy soils, which are sandier than the Haymond soil; in the slightly higher positions on the landscape
• The somewhat excessively drained Elsah soils, which have gravel throughout and are closer to stream channels than the Haymond soil

Use and Management

Woodland

Management concerns: Plant competition
Management measures or considerations:
• Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Measures that protect the woodland from fire are needed.

Wildlife habitat

Management measures or considerations:
• This soil is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
• Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw
Woodland ordination symbol: 8A

3333—Wakeland silt loam, frequently flooded

Setting

Position on the landform: Flood plains
Shape of areas: Long and narrow
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 10 to 650 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—brown, very friable silt loam

Substratum:
7 to 33 inches—variegated brown and grayish brown, mottled, friable silt loam
33 to 60 inches—variegated dark gray and dark grayish brown, mottled, friable silt loam

Composition

Wakeland and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that are more acid in the substratum
• Soils that have a buried soil below a depth of 20 inches
• Soils that have a seasonal high water table at a depth of more than 3 feet
• Soils that have thin layers of loam and fine sandy loam in the lower part of the substratum

Contrasting inclusions:
• The well drained Haymond soils on slight rises
• The somewhat excessively drained Elsah soils, which have chert fragments throughout and are closer to streams than the Wakeland soil

Use and Management

Cropland

Management concerns: Flooding, wetness, and tilth
Management measures or considerations:
• Flooding and the seasonal high water table may delay planting in some years.
• Subsurface tile drains and surface drains help to overcome the wetness.
• Keeping tillage to a minimum, leaving crop residue on the surface after planting, and regularly adding other organic material help to maintain productivity, minimize crusting, and improve tilth.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 5A

3333L—Wakeland silt loam, frequently flooded, long duration

Setting

Position on the landform: Swells
Shape of areas: Irregular

Flooding frequency: Frequent
Flooding duration: Long
Size of areas: 10 to 650 acres
Major use: Wildlife habitat

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—brown, very friable silt loam

Substratum:
6 to 25 inches—brown and grayish brown, mottled, friable silt loam
25 to 60 inches—grayish brown, mottled, friable silt loam with thin strata of pale brown and yellowish brown fine sandy loam and loamy fine sand

Composition

Wakeland and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that are more acid in the substratum
- Soils that have a buried soil below a depth of 20 inches
- Soils that have a seasonal high water table at a depth of more than 3 feet
- Soils that have more clay in the substratum

Contrasting inclusions:
- The well drained Haymond soils in the slightly higher positions on the landscape

Use and Management

Wildlife habitat

Management measures or considerations:
- This soil is in diversion ditches on the flood plain along the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 5A

3404—Titus silty clay loam, frequently flooded

Setting

Position on the landform: Depressions
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Brief
Ponding: Frequent for brief periods throughout the year
Size of areas: 5 to 175 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: 0.5 foot above to 2.0 feet below the surface
Organic matter content: High
Erosion hazard: None or slight
Tilth: Can be easily tilled only within a limited range in moisture content

Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—very dark gray, firm silty clay loam

Subsurface layer:
10 to 22 inches—very dark gray, firm silty clay

Subsoil:
22 to 60 inches—dark gray, mottled, firm silty clay

Composition

Titus and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a lighter colored surface layer
- Soils that have less clay in the subsoil
- Soils that have up to 15 inches of light colored overwash material

Contrasting inclusions:
- Ambraw soils, which have more sand in the subsoil than the Titus soil; in positions on the landscape similar to those of the Titus soil

Use and Management

Cropland

Management concerns: Flooding, wetness, and tilth
Management measures or considerations:
- Wetness caused by flooding and the seasonal high water table delays planting in most years.
- Surface drains or diversions reduce the extent of crop damage caused by floodwater.
- Varieties that are adapted to a shorter growing season and wetter soil conditions should be selected.
- Surface inlet tile functions satisfactorily if suitable outlets are available.
- Tilling when the soil is wet causes surface compaction and cloddiness. Keeping tillage to a minimum and returning crop residue to the soil help to prevent compaction and improve tilth.

Woodland

Management concerns: Seedling mortality, windthrow, and plant competition
Management measures or considerations:
- The use of equipment is limited to periods when the soil is firm.
- Planting mature stock and planting on ridges reduce the seedling mortality rate.
- Using a harvesting method that does not leave the remaining trees isolated or widely spaced and removing only high-value trees from a strip 50 feet wide along the western and southern edges of the woodland reduce the hazard of windthrow.
- The competition from undesirable plants in openings created by timber harvesting can be reduced by chemical or mechanical means.
- Controlling grazing by livestock prevents reduction or destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Protection from fire prevents injury to trees and maintains the leaf mulch.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 2W

3404L—Titus silty clay loam, frequently flooded, long duration

Setting

Position on the landform: Depressions
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Long
Ponding: Frequent for long periods throughout the year
Size of areas: 5 to 225 acres
Major use: Wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: 0.5 foot above to 2.0 feet below the surface
Organic matter content: High
Erosion hazard: None or slight
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—very dark gray, firm silty clay loam

Subsurface layer:
10 to 22 inches—very dark gray, firm silty clay

Subsoil:
22 to 60 inches—dark gray, mottled, firm silty clay

Composition

Titus and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a lighter colored surface layer
- Soils that have less clay in the subsoil
- Soils that have up to 15 inches of light colored overwash material

Contrasting inclusions:
- Ambraw soils, which have more sand in the subsoil than the Titus soil; in positions on the landscape similar to those of the Titus soil

Use and Management

Wildlife habitat

Management measures or considerations:
- This soil is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Woodland

Management concerns: Plant competition
Management measures or considerations:
- Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: Vw
Woodland ordination symbol: 2W

3415—Orion silt loam, frequently flooded

Setting

Position on the landform: Flood plains and other areas subject to alluvial overwash
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 5 to 200 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Silty alluvium
Runoff: Very slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—variegated dark grayish brown and dark brown, friable silt loam

Substratum:
6 to 22 inches—dark grayish brown and very dark grayish brown, friable silt loam

Buried soil:
22 to 49 inches—black, friable silt loam
49 to 60 inches—very dark gray, mottled, friable silt loam

Composition

Orion and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a buried soil below a depth of 40 inches
- Soils that have more clay in the subsoil
- Soils that have a seasonal high water table at a depth of more than 3 feet

Contrasting inclusions:
- The well drained Haymond soils in the slightly higher positions on the landscape
- The moderately well drained Jules soils in positions on the landscape similar to those of the Orion soil

Use and Management

Cropland

Management concerns: Flooding, wetness, and tilth
Management measures or considerations:
- Wetness caused by flooding and the seasonal high water table delays planting in most years.
- Surface drains or diversions reduce the extent of crop damage caused by floodwater.
- Varieties that are adapted to a shorter growing season and wetter soil conditions should be selected.
- Subsurface tile drains function satisfactorily if suitable outlets are available.
- Keeping tillage to a minimum, returning crop residue to the soil, and regularly adding other organic material minimize crusting and improve tilth.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

3415L—Orion silt loam, frequently flooded, long duration

Setting

Position on the landform: Creek bottoms and areas subject to alluvial overwash
Shape of areas: Irregular
Flooding frequency: Frequent
Flooding duration: Long
Size of areas: 5 to 80 acres
Major use: Wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Silty alluvium
Runoff: Very slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark brown and dark grayish brown, friable silt loam

Substratum:
6 to 22 inches—dark grayish brown and very dark grayish brown, friable silt loam

Buried soil:
22 to 49 inches—black, friable silt loam
49 to 60 inches—very dark gray, friable silt loam

Composition

Orion and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a buried soil below a depth of 40 inches
- Soils that have more clay in the subsoil
- Soils that have a seasonal high water table at a depth of more than 3 feet

Contrasting inclusions:
- The well drained Haymond soils in the slightly higher positions on the landscape
- The moderately well drained Jules soils in positions on the landscape similar to those of the Orion soil

Use and Management

Wildlife habitat

Management measures or considerations:
- This soil is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Woodland

Management concerns: Plant competition
Management measures or considerations:
• Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 2W

3428—Coffeen silt loam, frequently flooded

Setting

Position on the landform: Swells or alluvial fans
Shape of areas: Long and narrow or rounded
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 5 to 350 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Tilth: Good
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—very dark grayish brown, very friable silt loam

Subsurface layer:
10 to 18 inches—very dark gray, very friable silt loam

Subsoil:
18 to 33 inches—dark grayish brown, mottled, friable silt loam
33 to 60 inches—dark gray, mottled, friable silt loam

Composition

Coffeen and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil
• Soils that have a thicker surface layer

Contrasting inclusions:
• The poorly drained Beaucoup soils in the slightly lower positions on the landscape
• Orion and Wakeland soils, which have a lighter colored surface layer than the Coffeen soil; in the slightly higher positions on the landscape

Use and Management

Cropland

Management concerns: Flooding and wetness
Management measures or considerations:
• Wetness caused by flooding and the seasonal high water table may delay planting in some years.
• Subsurface tile drains and surface drains help to overcome the wetness.
• Keeping tillage to a minimum and leaving crop residue on the surface after planting help to maintain good tilth and productivity.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

3428L—Coffeen silt loam, frequently flooded, long duration

Setting

Position on the landform: Swells or alluvial fans
Shape of areas: Long and narrow or rounded
Flooding frequency: Frequent
Flooding duration: Long
Size of areas: 5 to 100 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—very dark grayish brown, very friable silt loam

Subsurface layer:
10 to 18 inches—very dark gray, very friable silt loam

Subsoil:
18 to 33 inches—dark grayish brown, mottled, friable silt loam
33 to 60 inches—dark gray, mottled, friable silt loam

Composition

Coffeen and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have a thicker surface layer

Contrasting inclusions:
- The poorly drained Beaucoup soils in the slightly lower positions on the landscape
- Orion and Wakeland soils, which have a lighter colored surface layer than the Coffeen soil; in the slightly higher positions on the landscape

Use and Management

Woodland

Management concerns: Plant competition

Management measures or considerations:
- Plant competition affects the seedlings of desirable species. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means.
- Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
- Measures that protect the woodland from fire are needed.

Wildlife habitat

Management measures or considerations:
- This soil is in unprotected areas along the Illinois River and the Mississippi River. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 6W

3475—Elsah gravelly loam, frequently flooded

Setting

Position on the landform: Swells along stream channels
Shape of areas: Long and narrow
Flooding frequency: Frequent
Flooding duration: Brief
Size of areas: 5 to 100 acres
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderate
Parent material: Loamy alluvium that contains angular gravel and chert rock fragments
Runoff: Slow

Available water capacity: Low
Organic matter content: Moderately low
Erosion hazard: Moderate
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 6 inches—brown and dark brown, friable gravelly loam

Substratum:
6 to 12 inches—brown, friable very gravelly loam
12 to 42 inches—yellowish brown and dark yellowish brown, very friable and friable very gravelly sandy loam
42 to 60 inches—mottled yellowish brown and brown, friable and very friable gravelly loam or very gravelly sandy loam

Composition

Elsah and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have 10 to 30 inches of silt loam over cherty material
• Soils that are flooded less frequently
• Soils that are gently sloping

Contrasting inclusions:
• The somewhat poorly drained Wakeland soils in the slightly lower positions on the landscape farther from stream channels than the Elsah soil
• The well drained Haymond soils in convex positions on the landscape farther from stream channels than the Elsah soil
• The well drained Drury soils on toeslopes
• The excessively drained Sarpy soils in positions on the landscape similar to those of the Elsah soil

Use and Management

Pasture and hay

Management concerns: Low available water capacity, excessive leaching of nutrients, and soil blowing
Management measures or considerations:
• Selecting drought-tolerant grasses and legumes for planting can help to maintain or improve forage stands.
• Applying fertilizer frequently and in small amounts helps to prevent excessive loss of plant nutrients through leaching.
• Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition and help to control soil blowing.
• Suitable species include bromegrass, orchardgrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Woodland

Management concerns: Seedling mortality and plant competition
Management measures or considerations:
• The seedling mortality rate can be reduced by planting nursery stock that is larger than normal, by planting in furrows, and by mulching.
• Competing vegetation can be controlled by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIs
Woodland ordination symbol: 5F

3475L—Elsah gravelly loam, frequently flooded, long duration

Setting

Position on the landform: Swells along stream channels
Shape of areas: Long and narrow
Flooding frequency: Frequent
Flooding duration: Long
Size of areas: 5 to 20 acres
Major use: Woodland

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderate
Parent material: Loamy alluvium that contains angular gravel and chert rock fragments
Runoff: Slow

Available water capacity: Low
Organic matter content: Moderately low
Erosion hazard: Moderate
Shrink-swell potential: Low
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 6 inches—brown and dark brown, friable gravelly loam

Substratum:
6 to 12 inches—brown, friable very gravelly loam
12 to 42 inches—yellowish brown and dark yellowish brown, very friable and friable very gravelly sandy loam
42 to 60 inches—mottled yellowish brown and brown, friable and very friable gravelly loam or very gravelly sandy loam

Composition

Elsah and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have 10 to 30 inches of silt loam over cherty material
• Soils that are flooded less frequently
• Soils that are gently sloping

Contrasting inclusions:
• The somewhat poorly drained Wakeland soils in the slightly lower positions on the landscape farther from stream channels than the Elsah soil
• The well drained Haymond soils in convex positions on the landscape farther from stream channels than the Elsah soil
• The well drained Drury soils on toeslopes
• The excessively drained Sarpy soils in positions on the landscape similar to those of the Elsah soil

Use and Management

Woodland

Management concerns: Seedling mortality and plant competition
Management measures or considerations:
• This soil is in low, unprotected areas along the Illinois River and the Mississippi River.
• The seedling mortality rate can be reduced by planting nursery stock that is larger than normal, by planting in furrows, and by mulching.
• Competing vegetation can be controlled by chemical or mechanical means.
• Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots.
• Measures that protect the woodland from fire are needed.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw
Woodland ordination symbol: 5F

4070—Beaucoup silty clay loam, ponded

Setting

Position on the landform: Shallow depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Ponding: Frequent for long periods throughout the year
Size of areas: 5 to 60 acres
Major use: Wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Very poorly drained
Permeability: Moderately slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: 0.5 foot above to 1.0 foot below the surface
Organic matter content: High
Erosion hazard: None or slight
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 12 inches—very dark gray, mottled, firm silty clay loam

Subsurface layer:
12 to 21 inches—very dark gray, mottled, firm silty clay loam

Subsoil:
21 to 42 inches—dark gray, mottled, very firm and firm silty clay loam

Substratum:
42 to 60 inches—dark gray, mottled, firm silty clay loam

Composition

Beaucoup and similar soils: 80 to 85 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a surface layer and subsurface layer that are more than 24 inches thick
- Soils that are underlain by sandier material

Contrasting inclusions:
- The poorly drained Darwin soils, which contain more clay than the Beaucoup soil; in landscape positions similar to or lower than those of the Beaucoup soil
- The poorly drained Ambraw soils, which contain more sand in the subsoil than the Beaucoup soil; in positions on the landscape similar to those of the Beaucoup soil

Use and Management

Wildlife habitat

Management measures or considerations:
- This soil is in areas on the flood plains along the Illinois and Mississippi Rivers. These areas provide habitat and a water supply for wildlife. Shallow water areas generally are available.
- Grain and seed crops, wild herbaceous plants, and wetland plants can be grown on this soil.
- During periods when it is ponded, this soil furnishes temporary feeding and resting sites for waterfowl.

Dwellings

Management concerns: Flooding and ponding
- Because of the flooding and ponding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding and ponding
- Because of the flooding and ponding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: Vw

7088—Sparta loamy fine sand, rarely flooded

Setting

Position on the landform: Swells and knolls
Shape of areas: Irregular
Flooding frequency: Rare
Size of areas: 5 to 25 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Excessively drained
Permeability: Rapid
Parent material: Sandy sediments
Runoff: Slow
Available water capacity: Low
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Low
Potential for frost action: Low

Typical Profile

Surface layer:
0 to 9 inches—very dark gray, very friable loamy fine sand

Subsurface layer:
9 to 12 inches—very dark grayish brown, very friable loamy fine sand

Subsoil:
12 to 17 inches—brown, very friable loamy sand
17 to 49 inches—dark yellowish brown and strong brown, very friable loamy fine sand

Substratum:
49 to 60 inches—dark yellowish brown, loose fine sand

Composition

Sparta and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have less sand and more clay in the solum
- Soils that have a thinner surface layer
- Soils that are gently sloping

Contrasting inclusions:
- The somewhat poorly drained Ceresco soils, which have more clay than the Sparta soil; in the lower positions on the landscape

• The excessively drained, light colored Sarpy soils; in positions on the landscape similar to those of the Sparta soil

Use and Management

Cropland

Management concerns: Low available water capacity, excessive leaching of nutrients, and soil blowing
Management measures or considerations:
• Because of the low available water capacity, crops are subject to damage from drought.
• Short-season or drought-tolerant crop varieties should be selected for planting.
• Applying fertilizer frequently and in small amounts helps to prevent excessive loss of plant nutrients through leaching.
• Using a system of conservation tillage that leaves crop residue on the surface after planting and regularly adding other organic material help to control soil blowing, maintain good tilth, and conserve moisture.

Pasture and hay

Management concerns: Low available water capacity, excessive leaching of nutrients, and soil blowing
Management measures or considerations:
• Selecting drought-tolerant grasses and legumes for planting can help to maintain or improve forage stands.
• Applying fertilizer frequently and in small amounts helps to prevent excessive loss of plant nutrients through leaching.
• Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition and help to control soil blowing.
• Suitable species include bromegrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Rapid permeability
Management measures or considerations:
• Onsite investigation is needed.
• This soil readily absorbs but does not adequately filter the effluent from septic tanks. The poor filtering capacity can result in the pollution of ground water.
• Filling or mounding with suitable material increases the filtering capacity of the field.

Interpretive Groups

Land capability classification: IVs

8070—Beaucoup silty clay loam, occasionally flooded

Setting

Position on the landform: Broad flats and shallow depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Ponding: Occasional for brief periods in the spring
Size of areas: 10 to 900 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: 0.5 foot above to 1.0 foot below the surface
Organic matter content: High
Erosion hazard: None or slight
Tilth: Can be easily tilled only within a limited range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 7 inches—very dark grayish brown, friable silty clay loam

Subsurface layer:
7 to 12 inches—very dark gray, firm silty clay loam

Subsoil:
12 to 60 inches—dark gray, mottled, firm silty clay loam

Composition

Beaucoup and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have less clay in the subsoil
• Soils that have a surface layer and subsurface layer that are more than 24 inches thick
• Soils that are underlain by sandier material

Contrasting inclusions:
• Titus soils, which have more clay in the subsoil than the Beaucoup soil; in the lower positions on the landscape
• The somewhat poorly drained Orion soils, which have a lighter colored surface layer than the Beaucoup soil and contain less clay; in the slightly higher positions on the landscape
• The somewhat poorly drained Tice soils in the slightly higher positions on the landscape
• Undrained areas that are occasionally ponded for periods long enough to cause crop damage

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• Measures that maintain the drainage system are needed. Additional drainage is needed in some areas. The wetness can be reduced by surface ditches, surface inlet tile, or subsurface tile drains.
• Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and minimizing tillage improve tilth and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8071—Darwin silty clay loam, occasionally flooded

Setting

Position on the landform: Depressions
Shape of areas: Oval
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 10 to 300 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Very slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: Moderate
Seasonal high water table: At the surface to 1 foot below the surface
Organic matter content: High
Erosion hazard: Slight
Tilth: Can be easily tilled only within a limited range in moisture content
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—black, firm silty clay loam

Subsurface layer;
8 to 13 inches—very dark gray, mottled, firm silty clay loam

Subsoil:
13 to 48 inches—dark gray, mottled, firm silty clay
48 to 60 inches—dark gray, mottled, firm silty clay loam

Composition

Darwin and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have less clay in the subsoil
• Soils that have a surface layer and subsurface layer that are thicker than 24 inches
• Soils that are more acid in the subsoil

Contrasting inclusions:
• The somewhat poorly drained Dupo soils, which have light colored, silty overwash above a buried soil; in the higher positions on the landscape
• Beaucoup soils, which contain less clay than the Darwin soil; in the higher positions on the landscape
• Undrained areas that are frequently ponded for periods long enough to cause crop damage

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• A drainage system has been installed in most areas. Measures that maintain the drainage system are needed. Additional drainage may be needed in some areas. A combination of surface ditches and land leveling reduces the wetness.
• Tilling when the soil is wet causes surface cloddiness and compaction and reduces the rate of water infiltration. Returning crop residue to the soil,

adding other organic material, and minimizing tillage increase the rate of water infiltration and improve tilth.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw

8092—Sarpy loamy fine sand, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Long and narrow
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 50 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Excessively drained
Permeability: Rapid
Parent material: Alluvium
Runoff: Slow
Available water capacity: Low
Organic matter content: Low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: Low

Typical Profile

Surface layer:
0 to 7 inches—brown, very friable loamy fine sand

Substratum:
7 to 32 inches—yellowish brown, loose sand with strata of loamy fine sand
32 to 60 inches—light yellowish brown, loose sand

Composition

Sarpy and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the substratum
• Soils that are gently sloping

Contrasting inclusions:
• The somewhat poorly drained Ceresco soils in the lower positions on the landscape
• Sparta soils, which have a dark surface layer; in positions on the landscape similar to those of the Sarpy soil

Use and Management

Cropland

Management concerns: Low available water capacity, excessive leaching of nutrients, and soil blowing
Management measures or considerations:
• Because of the low available water capacity, crops are subject to damage from drought.
• Short-season or drought-tolerant crop varieties should be selected for planting.
• Applying fertilizer frequently and in small amounts helps to prevent excessive loss of plant nutrients through leaching.
• A system of conservation tillage that leaves crop residue on the surface after planting and regularly adding other organic material help to control soil blowing, maintain tilth, and conserve moisture.

Pasture and hay

Management concerns: Low available water capacity, excessive leaching of nutrients, and soil blowing
Management measures or considerations:
• Selecting drought-tolerant grasses and legumes for planting can help to maintain or improve forage stands.
• Applying fertilizer frequently and in small amounts helps to prevent excessive loss of plant nutrients through leaching.
• Proper stocking rates, rotation grazing, and deferred grazing help to keep the pasture in good condition and help to control soil blowing.
• Suitable species include bromegrass, tall fescue, and alfalfa. Suitable warm-season grasses include indiangrass, switchgrass, and little bluestem.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding

• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IVs

8180—Dupo silt loam, occasionally flooded

Setting

Position on the landform: Nearly level swells and shallow depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding frequency: Brief
Size of areas: 5 to 200 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and slow in the lower part
Parent material: Alluvium
Runoff: Slow
Available water capacity: High
Seasonal high water table: 1.5 to 3.5 feet below the surface
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 11 inches—dark grayish brown, friable silt loam

Substratum:
11 to 22 inches—brown, mottled, friable silt loam

Buried soil:
22 to 29 inches—very dark gray, firm silty clay loam
29 to 56 inches—very dark gray, very firm silty clay
56 to 60 inches—dark gray, very firm silty clay

Composition

Dupo and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
• Soils that have less clay in the buried layers
• Soils that have a buried soil at a depth of more than 40 inches or less than 20 inches

Contrasting inclusions:
• The poorly drained Titus and very poorly drained Darwin soils in the lower positions on the landscape
• The somewhat poorly drained Wakeland soils in the higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• Measures that maintain the drainage system are needed. Improved drainage is needed in some areas. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available.
• Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface compaction and crusting, and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw

8183—Shaffton silty clay loam, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 140 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Moderate

Seasonal high water table: 2 to 4 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled only within a limited range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface layer:
0 to 11 inches—very dark grayish brown, firm silty clay loam

Subsoil:
11 to 16 inches—brown, friable silty clay loam
16 to 28 inches—pale brown, mottled, firm silty clay loam
28 to 36 inches—light brownish gray, mottled, firm loam
36 to 46 inches—light brownish gray, mottled, very friable fine sandy loam

Substratum:
46 to 60 inches—pale brown, loose, stratified loamy fine sand and loam

Composition

Shaffton and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
• Soils that have a thinner surface layer
• Soils that have more silt and less sand in the lower part of the subsoil
• Soils that are gently sloping
• Soils that have a surface layer of silt loam

Contrasting inclusions:
• The poorly drained Ambraw soils in the lower, slightly concave positions
• The somewhat poorly drained Ceresco soils, which contain more sand in the upper part of the solum than the Shaffton soil; in the slightly higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• Measures that maintain the drainage system are needed. Additional drainage is needed in some areas. Wetness can be reduced by surface ditches, surface inlet tile, or subsurface drains.
• Minimizing tillage and returning crop residue to the soil improve tilth and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8217—Twomile silt loam, occasionally flooded

Setting

Position on the landform: Broad plains and shallow depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Very brief
Size of areas: 5 to 90 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: Moderate
Seasonal high water table: At the surface to 2 feet below the surface
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown, friable silt loam

Subsurface layer:
6 to 24 inches—dark grayish brown and light brownish gray, mottled, friable silt loam

Subsoil:
24 to 60 inches—grayish brown, mottled, firm silt loam

Composition

Twomile and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have a thinner subsurface layer or do not have a subsurface layer
- Soils that have a darker surface layer
- Soils that have a seasonal high water table at a depth of more 1 foot

Contrasting inclusions:
- The somewhat poorly drained Wakeland soils along drainageways
- The well drained Drury soils on footslopes

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
- The seasonal high water table may delay planting in some years.
- Subsurface tile drains and surface drains help to overcome the wetness.
- Keeping tillage to a minimum, leaving crop residue on the surface after planting, and regularly adding other organic material help to maintain productivity, minimize crusting, and improve tilth.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw

8284—Tice silt loam, occasionally flooded

Setting

Position on the landform: Swells and broad plains
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 215 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: High
Seasonal high water table: 1.5 to 3.0 feet below the surface
Organic matter content: Moderate
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—very dark grayish brown, firm silt loam

Subsoil:
10 to 57 inches—dark brown, mottled, firm silt loam and silty clay loam
57 to 60 inches—grayish brown, mottled, friable silt loam

Composition

Tice and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have less clay in the subsoil
- Soils that have a thinner surface layer

Contrasting inclusions:
- The poorly drained Beaucoup soils in the lower positions on the landscape
- Shaffton soils, which have more sand in the lower part of the subsoil and substratum than the Tice soil; in positions on the landscape similar to those of the Tice soil

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
- No major limitations affect the use of this soil for corn, soybeans, or small grain.
- The seasonal high water table may delay planting in

some years. Subsurface tile drains function satisfactorily if suitable outlets are available.
• A system of conservation tillage that leaves crop residue on the surface after planting helps to maintain good tilth and productivity.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8288—Petrolia silt loam, occasionally flooded

Setting

Position on the landform: Broad flats and shallow depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Ponding: Occasional for brief periods in the spring
Size of areas: 10 to 90 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: At the surface to 1 foot below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 11 inches—dark grayish brown, firm silt loam
Substratum:
11 to 34 inches—dark gray, mottled, firm silty clay loam
34 to 60 inches—gray and dark gray, mottled, friable silt loam

Composition

Petrolia and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the surface layer
• Soils that have more sand in the lower part of the solum

Contrasting inclusions:
• The somewhat poorly drained Shaffton soils, which have a darker surface layer than the Petrolia soil and contain more sand in the lower part of the solum; in positions on the landscape similar to those of the Petrolia soil
• Beaucoup soils, which have a darker surface layer than the Petrolia soil; in the lower positions on the landscape
• Ambraw soils, which have a darker surface layer than the Petrolia soil; in the higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• Measures that maintain the drainage system are needed. Additional drainage is needed in some areas. The wetness can be reduced by surface ditches, surface inlet tile, or subsurface tile drains.
• Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and minimizing tillage improve tilth and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw

8302—Ambraw loam, occasionally flooded

Setting

Position on the landform: Broad plains and shallow depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 250 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderately slow or moderate
Parent material: Alluvium
Runoff: Very slow
Available water capacity: Moderate
Seasonal high water table: At the surface to 1 foot below the surface
Organic matter content: Moderate
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

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

Subsurface layer:
8 to 13 inches—very dark grayish brown, friable loam

Subsoil:
13 to 35 inches—dark gray, mottled, friable or firm sandy loam
35 to 60 inches—gray, mottled, friable sandy loam

Composition

Ambraw and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the surface layer and in the subsoil
• Soils that have a thicker surface layer and subsurface layer

Contrasting inclusions:
• The somewhat poorly drained Shaffton and Ceresco soils in the slightly higher positions on the landscape
• Undrained areas that are occasionally ponded for periods long enough to cause damage to crops

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
• Measures that maintain the drainage system are needed. Additional drainage is needed in some areas. The wetness can be reduced by surface ditches, surface inlet tile, or subsurface tile drains.
• Returning crop residue to the soil and minimizing tillage help to maintain tilth and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8331—Haymond silt loam, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 10 to 100 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low

Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown, friable silt loam

Subsoil:
8 to 41 inches—dark yellowish brown, friable silt loam

Substratum:
41 to 60 inches—brown, friable silt loam with thin strata of fine sandy loam

Composition

Haymond and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have a seasonal high water table at a depth of 3 to 6 feet

Contrasting inclusions:
- The somewhat poorly drained Wakeland and Orion soils in the slightly lower positions on the landscape
- The excessively drained Sarpy soils, which are sandier than the Haymond soil; on rises

Use and Management

Cropland

Management concerns: Tilth
Management measures or considerations:
- No major limitations affect the use of this soil for corn, soybeans, or small grain.
- A system of conservation tillage that leaves crop residue on the surface after planting improves tilth and productivity.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8333—Wakeland silt loam, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 10 to 1,200 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown, friable silt loam

Substratum:
10 to 22 inches—brown, mottled, friable silt loam
22 to 60 inches—mottled dark grayish brown and brown, friable silt loam

Composition

Wakeland and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that are more acid in the substratum
- Soils that have a buried soil at a depth of less than 40 inches
- Soils that have a seasonal high water table at a depth of more than 3 feet
- Soils that have thin layers of loam and fine sandy loam in the lower part of the substratum
- Soils that have more clay in the substratum

Contrasting inclusions:
- The somewhat poorly drained Coffeen soils, which have a dark surface layer; in the slightly lower areas

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• Measures that maintain the drainage system are needed. Improved drainage is needed in some areas. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available.
• Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface compaction and crusting, and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8341—Ambraw silt loam, sandy substratum, occasionally flooded

Setting

Position on the landform: Depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 70 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate in the upper part and rapid in the substratum
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: At the surface to 2 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 9 inches—very dark gray, friable or firm silt loam

Subsoil:
9 to 19 inches—very dark grayish brown, mottled, firm silty clay loam and silt loam
19 to 34 inches—gray and dark gray, mottled, firm or friable loam
34 to 47 inches—gray, mottled, friable loam with strata of fine sandy loam

Substratum:
47 to 60 inches—dark gray, mottled, very friable loamy fine sand

Composition

Ambraw and similar soils: 88 to 92 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the surface layer and in the upper part of the subsoil
• Soils that are deeper to the underlying sandy material

Contrasting inclusions:
• The somewhat poorly drained Shaffton soils in the slightly higher, convex positions on the landscape
• Undrained areas that are occasionally ponded for periods long enough to cause damage to crops

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
• Measures that maintain the drainage system are needed. Additional drainage is needed in some areas. The wetness can be reduced by surface ditches, surface inlet tile, or subsurface tile drains.
• Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and minimizing tillage help to maintain tilth and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8395—Ceresco loam, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 100 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate or moderately rapid
Parent material: Alluvium
Runoff: Slow
Available water capacity: Moderate
Seasonal high water table: 1 to 2 feet below the surface
Organic matter content: Moderate
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

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

Subsurface layer:
7 to 14 inches—very dark grayish brown, mottled, very friable loam

Subsoil:
14 to 42 inches—brown, mottled, very friable fine sandy loam

Substratum:
42 to 60 inches—grayish brown and dark grayish brown, mottled, very friable fine sandy loam with strata of fine sand and silt loam

Composition

Ceresco and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a thinner or lighter colored surface layer
- Soils that have a seasonal high water table at a depth of more than 2 feet
- Soils that have a surface layer of fine sandy loam

Contrasting inclusions:
- The poorly drained Ambraw soils in the lower, slightly concave positions on the landscape
- Shaffton soils, which contain more clay in the upper part of the solum than the Ceresco soil; in the slightly lower positions on the landscape
- The excessively drained Sparta and Sarpy soils, which are sandier than the Ceresco soil; in the higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
- Measures that maintain the drainage system are needed. Additional drainage is needed in some areas. Wetness can be reduced by surface ditches, surface inlet tile, or subsurface drains.
- Minimizing tillage and returning crop residue to the soil help to maintain good tilth and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8396—Vesser silt loam, occasionally flooded

Setting

Position on the landform: Broad flats
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 10 to 300 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate

Parent material: Alluvium
Runoff: Slow
Available water capacity: High
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—very dark grayish brown, very friable silt loam

Subsurface layer:
10 to 22 inches—gray, mottled, very friable silt loam

Subsoil:
22 to 37 inches—grayish brown, mottled, friable silt loam

Substratum:
37 to 53 inches—gray, mottled, very friable silt loam
53 to 60 inches—gray, mottled, very friable, stratified silt loam and silt

Composition

Vesser and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have a thinner surface layer

Contrasting inclusions:
- The somewhat poorly drained Coffeen soils in the lower positions on the landscape
- Twomile soils, which have a lighter colored surface layer than the Vesser soil; in positions on the landscape similar to those of the Vesser soil

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
- A drainage system has been installed in most areas. Measures that maintain the drainage system are needed. Additional drainage may be needed in some areas. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available.
- Applying a system of conservation tillage that leaves crop residue on the surface after planting and returning crop residue to the soil help to maintain tilth, prevent surface compaction and crusting, and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8404—Titus silty clay, occasionally flooded

Setting

Position on the landform: Depressions
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Ponding: Frequent for brief periods in the spring
Size of areas: 5 to 175 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Slow
Parent material: Alluvium
Runoff: Very slow
Available water capacity: High
Seasonal high water table: 0.5 foot above to 2.0 feet below the surface
Organic matter content: High
Erosion hazard: Slight
Tilth: Can be easily tilled only within a limited range in moisture content
Shrink-swell potential: High
Potential for frost action: High

Typical Profile

Surface layer:
0 to 10 inches—black, firm silty clay

Subsurface layer:
10 to 15 inches—very dark gray, firm silty clay

Subsoil:
15 to 46 inches—dark gray, mottled, firm silty clay loam

46 to 60 inches—very dark gray, mottled, firm silty clay

Composition

Titus and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have more clay in the subsoil
- Soils that have a lighter colored surface layer

Contrasting inclusions:
- Beaucoup soils, which have less clay in the solum than the Titus soil; in the slightly higher positions on the landscape
- The somewhat poorly drained Dupo soils, which have 20 to 40 inches of light colored, silty overwash; in the slightly higher positions on the landscape
- Ambraw soils, which have less clay in the solum than the Titus soil and are underlain by sandier material; in the slightly higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
- A drainage system has been installed in most areas. Measures that maintain the drainage system are needed. Additional drainage may be needed in some areas. A combination of surface ditches and land leveling reduces the wetness.
- Tilling when the soil is wet causes surface cloddiness and compaction and reduces the rate of water infiltration. Returning crop residue to the soil, adding other organic material, and minimizing tillage increase the rate of water infiltration and improve tilth.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIIw

8415—Orion silt loam, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 200 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderately low
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content but tends to crust and puddle after hard rains
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown and dark brown, friable silt loam

Substratum:
6 to 22 inches—dark grayish brown and very dark grayish brown, friable silt loam

Buried soil:
22 to 60 inches—black and very dark gray, mottled, friable silt loam

Composition

Orion and similar soils: 90 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a buried soil at a depth of less than 20 inches or more than 40 inches
- Soils that have more clay in the buried layers
- Soils that have a seasonal high water table at a depth of more than 3 feet

Contrasting inclusions:
- The poorly drained Beaucoup soils, which have a

dark surface layer and contain more clay than the Orion soil; in the lower positions on the landscape

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
• The seasonal high water table may delay planting in some years. Subsurface tile drains and surface drains help to overcome the wetness.
• Keeping tillage to a minimum, leaving crop residue on the surface after planting, and regularly adding other organic material help to maintain productivity, minimize crusting, and improve tilth.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8428—Coffeen silt loam, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 350 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Low
Potential for frost action: High

Typical Profile

Surface soil:
0 to 14 inches—very dark grayish brown, very friable silt loam

Subsoil:
14 to 45 inches—dark grayish brown, mottled, friable and very friable silt loam

Substratum:
45 to 60 inches—gray, mottled, very friable silt loam

Composition

Coffeen and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
• Soils that have more clay in the subsoil

Contrasting inclusions:
• Orion and Wakeland soils, which have a lighter colored surface layer than the Coffeen soil; in the slightly higher positions on the landscape
• The poorly drained Vesser soils, which have a thick subsurface layer; in the slightly higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
• No major limitations affect the use of this soil for corn, soybeans, or small grain.
• The seasonal high water table may delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available.
• A system of conservation tillage that leaves crop residue on the surface after planting helps to maintain good tilth and fertility.

Dwellings

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8451—Lawson silt loam, occasionally flooded

Setting

Position on the landform: Swells
Shape of areas: Irregular
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 10 to 125 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Runoff: Slow
Available water capacity: Very high
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Erosion hazard: Slight
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Typical Profile

Surface layer:
0 to 8 inches—very dark brown, very friable silt loam

Subsurface layer:
8 to 32 inches—very dark brown and very dark grayish brown, friable silt loam

Substratum:
32 to 60 inches—dark grayish brown, mottled, firm silty clay loam

Composition

Lawson and similar soils: 85 to 90 percent

Inclusions

Similar inclusions:
- Soils that have a thinner surface layer and subsurface layer
- Soils that have 5 to 10 inches of light colored overwash
- Soils that have a seasonal high water table at a depth of more than 3 feet

Contrasting inclusions:
- The poorly drained Beaucoup soils in shallow depressions
- The well drained Worthen and Raddle soils on footslopes

Use and Management

Cropland

Management concerns: Wetness
Management measures or considerations:
- No major limitations affect the use of this soil for corn, soybeans, or small grain.
- The seasonal high water table may delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available.
- A system of conservation tillage that leaves crop residue on the surface after planting helps to maintain tilth and productivity.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8452—Riley silty clay loam, occasionally flooded

Setting

Position on the landform: Swells
Flooding frequency: Occasional
Flooding duration: Brief
Size of areas: 5 to 40 acres
Major use: Cropland

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and rapid in the lower part
Parent material: Alluvium
Runoff: Slow
Available water capacity: Moderate
Seasonal high water table: 1 to 3 feet below the surface
Organic matter content: Moderate
Erosion hazard: None or slight
Tilth: Can be easily tilled only within a limited range in moisture content

Shrink-swell potential: Moderate
Potential for frost action: Moderate

Typical Profile

Surface soil:
0 to 13 inches—very dark gray and very dark grayish brown, firm silty clay loam

Subsoil:
13 to 27 inches—dark grayish brown and grayish brown, mottled, firm and friable silty clay loam and loam
27 to 36 inches—dark brown, mottled, friable loamy sand

Substratum:
36 to 76 inches—brown, loose sand

Composition

Riley and similar soils: 85 to 95 percent

Inclusions

Similar inclusions:
- Soils that have a thinner surface layer
- Soils that have more silt and less sand in the lower part of the subsoil
- Soils that are gently sloping
- Soils that have a surface layer of silt loam

Contrasting inclusions:
- The poorly drained Ambraw soils in the lower, slightly concave positions on the landscape
- The somewhat poorly drained Ceresco soils, which contain more sand in the upper part of the solum than the Riley soil; in the slightly higher positions on the landscape

Use and Management

Cropland

Management concerns: Wetness and tilth
Management measures or considerations:
- Measures that maintain the drainage system are needed. Additional drainage is needed in some areas. Wetness can be reduced by surface ditches, surface inlet tile, or subsurface drains.
- Minimizing tillage and returning crop residue to the soil improve tilth and increase the rate of water infiltration.

Dwellings

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for dwellings.

Septic tank absorption fields

Management concerns: Flooding
- Because of the flooding, this soil is unsuited to use as a site for septic tank absorption fields.

Interpretive Groups

Land capability classification: IIw

8789—Ambraw-Ceresco-Sarpy complex, occasionally flooded

Setting

Landform: Meander scrolls
Position on the landform: Ambraw—troughs; Ceresco—shoulder slopes of bowed ridges; Sarpy—summits of bowed ridges
Shape of areas: Irregular
Size of areas: 10 to 250 acres
Major use: Cropland

Soil Properties and Qualities

Ambraw

Drainage class: Poor
Permeability: Moderately slow or moderate
Parent material: Alluvium
Runoff: Very slow
Available water capacity: Moderate
Seasonal high water table: At the surface to 1 foot below the surface
Organic matter content: Moderate
Tilth: Can be easily tilled throughout a wide range in moisture content
Shrink-swell potential: Moderate
Potential for frost action: High

Ceresco

Drainage class: Somewhat poorly drained
Permeability: Moderate or moderately rapid
Parent material: Alluvium
Runoff: Slow
Available water capacity: Moderate
Seasonal high water table: 1 to 2 feet below the surface
Organic matter content: Moderate
Tilth: Good
Shrink-swell potential: Low
Potential for frost action: High

Sarpy

Drainage class: Excessively drained
Permeability: Very rapid

Parent material: Alluvium
Runoff: Very slow
Available water capacity: Low
Organic matter content: Very low
Erosion hazard: Slight
Tilth: Good
Shrink-swell potential: Low
Potential for frost action: Low

Typical Profile

Ambraw

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

Subsurface layer:
8 to 13 inches—very dark grayish brown, friable loam

Subsoil:
13 to 35 inches—dark gray, mottled, friable or firm sandy loam
35 to 60 inches—gray, mottled, friable sandy loam

Ceresco

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

Subsurface layer:
7 to 14 inches—very dark grayish brown, friable loam

Subsoil:
14 to 42 inches—brown, mottled, very friable fine sandy loam

Substratum:
42 to 60 inches—grayish brown and dark grayish brown, mottled, very friable fine sandy loam with strata of fine sand and silt loam

Sarpy

Surface layer:
0 to 7 inches—brown, very friable loamy fine sand

Substratum:
7 to 32 inches—yellowish brown, loose sand with strata of loamy fine sand
32 to 60 inches—light yellowish brown, loose sand

Composition

Ambraw, Ceresco, Sarpy, and similar soils: 85 to 90 percent

Inclusions

Inclusions similar to the Ambraw soil:
- Soils that have more clay in the surface layer and in the subsoil
- Soils that have a thicker surface layer and subsurface layer
- Undrained areas that are occasionally ponded for long enough periods to cause crop damage

Inclusions similar to the Ceresco soil:
- Soils that have a thinner or lighter colored surface layer
- Soils that have a surface layer of fine sandy loam

Inclusions similar to the Sarpy soil:
- Soils that have more clay in the substratum
- Soils that are gently sloping

Contrasting inclusions:
- The somewhat poorly drained Shaffton soils in positions on the landscape that are slightly higher than those of the Ambraw soil and lower than those of the Ceresco and Sarpy soils
- The excessively drained Sparta soils, which have a darker surface layer than the Sarpy soil; in positions on the landscape similar to those of the Sarpy soil

Use and Management

Cropland

Management concerns: Wetness, low available water capacity, excessive leaching of nutrients, and soil blowing
Management measures or considerations:
- In areas of the Ambraw and Ceresco soils, measures that maintain the drainage system are needed. Additional drainage is needed in some areas. The wetness can be reduced by surface ditches, surface inlet tile, or subsurface tile drains.
- Because of the low available water capacity, crops on the Sarpy soil are subject to damage from drought. Short-season or drought-tolerant crop varieties should be selected for planting on this soil.
- In areas of the Sarpy soil, applying fertilizer frequently and in small amounts helps to prevent excessive loss of plant nutrients through leaching.
- Using a system of conservation tillage that leaves crop residue on the surface after planting and regularly adding other organic material help to maintain tilth and increase the rate of water infiltration.
- In areas of the Sarpy soil, using a system of conservation tillage that leaves crop residue on the surface after planting and regularly adding other organic material help to control soil blowing and conserve moisture.

Dwellings

Management concerns: Flooding

• Because of the flooding, these soils are unsuited to use as sites for dwellings.

Septic tank absorption fields

Management concerns: Flooding
• Because of the flooding, these soils are unsuited to use as sites for septic tank absorption fields.

Interpretive Groups

Land capability classification: Ambraw and Ceresco—IIw; Sarpy—IVs

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It 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 the land that is best suited to food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. It either is used for food or fiber crops or is available for those crops. The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner. Prime farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 161,700 acres in Pike County, or nearly 30 percent of the total acreage, meets the requirements for prime farmland. Scattered areas of this land are throughout the county, but most are in the southern part, mainly in map units 1, 5, and 6. The soils in these areas are described under the heading "General Soil Map Units."

The map units in the survey area that are considered prime farmland are listed in table 5. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Some soils that have a seasonal high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. The need for these measures is indicated after the map unit name in table 5. Onsite evaluation is needed to determine whether or not these limitations have been overcome by corrective measures. In Pike County, most of the naturally wet soils have been adequately drained.

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 woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for 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 sand and gravel, 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.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

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 Cooperative Extension Service.

In 1970, about 295,500 acres in Pike County was used for cultivated crops, 99,810 acres was used for pasture and hay, and 1,100 acres was used for orchards (Illinois Conservation Needs Committee, 1970). The acreage of wheat and grain sorghum has increased over the past 10 years.

The potential of the soils in Pike County for increased production of food and fiber is poor. Most of the land that is presently not tilled is very susceptible to erosion. Food production could be increased by extending the latest crop production technology to all cropland in the county. This survey can greatly facilitate the application of such technology. It can also be used to locate areas of prime farmland.

Erosion is the major problem on about 29 percent of the cropland and pastureland in Pike County. It is a hazard in areas where the slope is more than 2 percent. Fayette, Rozetta, and Seaton soils are the major soils used for crops and pasture in the county that are susceptible to erosion.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a relatively high content of clay in the subsoil, such as Fayette soils. Productivity is also reduced on soils that are already severely eroded, such as some Rozetta soils. Second, erosion on farmland results in the sedimentation of streams. Controlling this erosion

minimizes the pollution of streams by sediment and improves the quality of water for municipal and recreational uses and for fish and wildlife.

In many sloping fields, preparing a good seedbed and tilling are difficult in severely eroded spots because the original friable surface layer has been eroded away. Such spots are common in the moderately eroded Fayette and Rozetta soils.

Erosion-control practices provide a protective surface cover, reduce the runoff rate, and increase the rate of water infiltration. A cropping system that keeps plant cover on the soil for extended periods helps to control erosion and preserves the productive capacity of the soils. On livestock farms, which require pasture and hay, using legume and grass forage crops in the cropping system reduces the hazard of erosion on sloping land, provides nitrogen for the following crop, and improves tilth.

Terraces, contour farming, conservation tillage, crop residue management, and crop rotations are effective, alone or in combinations, in controlling erosion on most of the soils used as farmland in Pike County. Conservation tillage systems are being used more commonly in the county in recent years.

Soil blowing is a hazard in areas of the sandy Sparta soils. Maintaining a plant cover, applying surface mulch, or tilling in such a way that the surface is left rough can minimize the hazard of soil blowing.

Soil tilth is important in the germination of seeds and in preparing a proper seedbed. It is also important for the proper infiltration of water. Some of the soils used for crops have a surface layer of silt loam that is low in organic matter content. Generally, the structure of such soils is weak, and intensive rainfall causes a crust to form on the surface. The crust is hard when dry and is nearly impervious to water. Once the crust forms, it reduces the infiltration rate and increases the runoff rate. Regular additions of crop residue, manure, and other organic material improve soil structure and minimize the formation of a crust. Leaving crop residue on the surface also helps to prevent the formation of a crust.

Tilth is also a concern in areas of Darwin and Titus soils. These soils have a very high content of clay and usually remain wet until late in the spring. If they are tilled when wet, they tend to become very cloddy when they dry. Thus, preparing a good seedbed is difficult in areas of these soils.

Orchards, vineyards, and nursery plants are suited to most of the well drained soils in the survey area (fig. 6). Early vegetables, small fruits, and orchards generally are poorly suited to soils in low positions where air drainage is poor and frost is frequent.

The latest information regarding crops can be obtained from local offices of the Cooperative Extension Service and the Natural Resources Conservation Service.

Information on the design of erosion-control practices for each kind of soil is contained in the Field Office Technical Guide. This information is available in local offices of the Natural Resources Conservation Service.

In some areas of naturally wet soils, the production of crops is generally not possible without artificial drainage. Examples are the poorly drained Darwin and Titus soils. Generally, the very slow permeability and the lack of suitable outlets make these soils unsuitable for subsurface drainage systems. A surface drainage system can be used to remove excess water in these areas (fig. 7).

Levees protect some of the soils in the county from flooding by river overflow. Other areas that are not protected are subject to annual flooding. Levees are not feasible in many of these areas. Selecting crop varieties that have a shorter growing season may be necessary, or the soils can be used less intensively.

Information on drainage design is contained in the Field Office Technical Guide available in local offices of the Natural Resources Conservation Service or the Cooperative Extension Service.

Most of the light colored upland soils are naturally acid. In areas of these soils, periodic applications of lime are needed to maintain high yields. The dark soils on bottom land tend to become acid because of farming methods and also need periodic applications of lime. Crops respond well to additions of limestone and nitrogen and, to some extent, to additions of phosphorus and potassium. Wheat and legume hay crops respond especially well to applications of phosphorus. On all soils the amount of lime and fertilizer used should be based on soil tests, on the needs of the individual crop, and on the desired level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime that should be applied.

Field crops suited to the soils and climate of the survey area include many that are not commonly grown. Corn and soybeans are the major row crops. Wheat is the most common close-growing crop. Forage crops include smooth bromegrass, tall

Figure 6.—A young orchard in an area of Fayette silt loam, 5 to 10 percent slopes, eroded.

fescue, alfalfa, and red clover. Grain sorghum is being grown in some areas.

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 6. 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 also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents (Fehrenbacher and others, 1978). Available yield data from nearby counties and results of field trials and demonstrations are also 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.

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 table 6 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 Cooperative Extension Service can

Figure 7.—This drainage ditch lowers the water table by removing excess surface water and providing outlets for subsurface drains.

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 woodland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961). Only class and subclass are used in this survey.

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

Class I soils have few limitations that restrict their use.

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

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

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

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

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, IIe.

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 I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of the map units in this survey area is given in the section "Detailed Soil Map Units" and in the yields table.

Woodland Management and Productivity

Kurt Bobsin, district forester, Illinois Department of Conservation, helped prepare this section.

Since early settlement, much of the less sloping timber land in Pike County has been cleared for farming. In 1985, about 92,500 acres in the county was covered with deciduous hardwood timber (fig. 8). The largest areas of woodland are in map units 4, 5, and 6, which are described under the heading "General Soil Map Units."

The forests in the county, like most throughout Illinois, have been subjected to various abuses, such as fire, livestock grazing, poor cutting practices, or a combination of these. Grazing has eliminated or damaged young seedlings and saplings, injured surface roots of larger trees, and caused soil compaction. Fire has resulted in butt scars and subsequent rot of otherwise good trees. Poor cutting practices, such as high-grade logging, have removed only the best trees and left trees of low quality, cull trees, and poor tree species. Over the years, all of these factors combined have resulted in woodlands that are understocked with desirable species, have little or no ability to regenerate, and are commonly producing at less than 50 percent of their potential. Good forest management practices are needed to build the forest resource into well stocked quality tracts of timber.

About six sawmills are within the county. Two are full-time commercial mills that produce grade lumber, blocking, or pallet lumber products. The remaining mills are custom cutting, part-time operations that deal in log-run lumber and sell this lumber locally (within a 50-mile radius). The largest percentage of logs sold commercially are sold to mills outside the county or are absorbed into the export veneer market.

There are six licensed timber buyers in Pike County. Generally, these individuals are independent operators that have the equipment and expertise to cut, skid, and haul logs to the appropriate markets. Many of the larger sawmills depend on these individuals to supply their lumber rather than employing their own logging crews.

Three forest types have been recognized on upland sites. The mixed hardwood type is in areas of deep, well drained soils on moist slopes that typically have a northern or eastern aspect. The most common tree species are basswood, northern red oak, white ash, slippery elm, American elm, hickory, black cherry, and sugar maple. Soils that support this forest type include Baylis, Elco, El Dara, Fayette, Hickory, and Seaton soils.

The mixed oak type is the most extensive forest type in Pike County. It occurs on gentle slopes, in ravines, and on medium to broad ridges. White oak, black oak, northern red oak, chinquapin oak, hickory, white ash, black cherry, American elm, slippery elm, basswood, and black walnut are the predominant species. Soils that support this forest type include Fayette, Rozetta, Seaton, and Stronghurst soils.

The oak-hickory type is the third major upland forest type. This forest type is on narrow ridges or steep side slopes. Species include hickory, post oak, black oak, shingle oak, and blackjack oak. The soils are slowly permeable and are droughty or shallow. Examples are Elizabeth, Goss, Hamburg, Keomah, Lacrescent, Gosport, and Ursa soils.

Two forest types are recognized in areas of bottom land in Pike County. The cottonwood type occurs on the better drained alluvial soils that are subject to overflow. The major species include cottonwood, sycamore, silver maple, green ash, American elm, slippery elm, boxelder, and willow. Haymond and Elsah soils commonly support these species.

The mixed bottom-land hardwood type is in areas of primary and secondary bottom land. Sycamore, black walnut, green ash, river birch, hackberry, honeylocust, bur oak, swamp white oak, and pin oak are the major species. Soils that support these species include Beaucoup, Titus, and Wakeland soils.

Forest management needs for the timber resources in the county can be generalized into four main categories—tree planting, timber stand

Figure 8.—Pike County has about 92,500 acres of deciduous forests. This forest is in an area of the Fayette-Seaton-Goss general soil map unit.

improvement, protection, and harvesting (Illinois Conservation Needs Committee, 1970). The planting or interplanting of seedlings is needed on approximately 29,000 acres to bring tree stocking levels up to the potential for the site. Increased growth rates and species quality can be improved on 25,000 acres through thinning and weeding. Minimizing or eliminating livestock grazing would reduce the hazard of erosion on about 40,000 acres of woodland. In addition, the harvesting of mature, defective, lower quality, or diseased trees is needed on an estimated 43,500 acres. These practices can enhance noncommercial timber resources and increase the economic value of commercial woodland.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce. The number 1 indicates low potential productivity; 2 and 3, moderate; 4 and 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the soil; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, and N.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting

depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *productivity class*. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 8 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in table 8 are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service or from a commercial nursery.

Recreation

Pike County has many areas of scenic and historic interest. These areas are used for hiking, camping, hunting, fishing, sightseeing, picnicking, and boating. Several river access areas are available for public use. The Mississippi and Illinois Rivers offer opportunities for fishing, hunting, boating, and waterskiing.

The potential for further recreational development is very favorable throughout the county. The hilly terrain, wooded slopes, and numerous creeks and streams provide a variety of opportunities for recreation.

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings 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 are also important. Soils 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.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

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 best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

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

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

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

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Areas used as wildlife habitat are not necessarily set aside for this purpose. Wildlife habitat is commonly a secondary use in areas used for other purposes, such as pasture or woodland. For example, the many wooded slopes in Pike County generally are well suited to habitat for woodland wildlife. The major species of wildlife in the survey area include rabbits, squirrels, deer, turkeys, raccoons, quail, red fox, coyote, and migratory waterfowl. The Illinois and Mississippi Rivers provide good opportunities for sport and commercial fishing. Common game fish include bass, bluegill, catfish, sauger, and walleye. Carp, buffalo, drum, and suckers are common commercial species. Wetlands adjacent to the major rivers provide resting and feeding areas for migratory ducks and geese in the spring and fall.

Good management can improve the habitat for wildlife. Keeping crop residue on the surface during fall and winter not only helps to control erosion but also greatly improves wildlife habitat in cropped areas. Deferring the mowing of grassed waterways, roadsides, and fence rows until early August, after the nesting season, can significantly increase the annual production of songbirds, quail, rabbits, and other kinds of wildlife that nest on the ground. Measures that exclude livestock from woodland, wetland, and streambanks can markedly improve wildlife habitat.

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.

In table 10, the soils in the survey area 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 are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

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 are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

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 are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, 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 oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

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, spruce, fir, cedar, and juniper.

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, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and 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, ring-necked pheasant, cottontail rabbit, bobolink, cardinal, upland sandpiper, horned lark, kingbird, mockingbird, bluebird (if nest boxes are provided), raccoon, coyote, fox squirrel, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include white-tailed deer, wood thrush, chickadee, scarlet tanager, pileated woodpecker, gray squirrel, woodcock, raccoon, warblers, and wild turkey. Wood ducks, hooded mergansers, and belted kingfishers also nest along wooded streams and rivers.

Habitat for wetland wildlife consists of open,

marshy or swampy shallow water areas. Seasonally flooded farmed wetlands also provide important feeding areas in spring and fall for migrating ducks, geese, and shore birds. Some of the wildlife attracted to wetland areas include many species of ducks, geese, egrets, herons, plovers, sandpipers, rails, marsh wrens, muskrat, mink, and beaver.

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 estimated data and test data in the "Soil Properties" section.

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 within a depth of 5 or 6 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 grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, 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, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; 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

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or dense glacial till; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or

banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock, to dense glacial till, or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

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 stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, to dense glacial till, or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to dense glacial till, to bedrock, or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

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 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

General suggestions for the design of septic tank absorption fields are given in the detailed soil map unit descriptions. Local and State ordinances may restrict the installation of septic tank absorption fields in areas of some soils. Requirements and specific design criteria in local and State codes and ordinances should be checked before any septic system is installed.

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. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock, to dense glacial till, or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive 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 and dense glacial till can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the 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.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, to dense glacial till, or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over dense glacial till, 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. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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 soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major

consideration. The ease of excavation is affected by large stones, a high 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 engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* 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 13, only the probability 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 engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

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.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

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.

Water Management

Table 14 gives 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. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

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. 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. 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.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to dense glacial till, to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to dense glacial till, to bedrock, or to a cemented pan; large stones; slope; and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock, to dense glacial till, or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

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, to dense glacial till, or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

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, to dense glacial till, or to a cemented pan affect the construction of grassed waterways. A hazard of soil blowing, 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.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

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 grain-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 shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

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 as much as about 15 percent, 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 (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-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 grain-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.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine 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-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major 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 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. A bulk density of more than 1.6 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 refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water 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 major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. 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.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major 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.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage

to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

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) 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 (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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 soil blowing in cultivated areas. The groups indicate the susceptibility of soil to soil blowing. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control soil blowing are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control soil blowing are used.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control soil blowing are used.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, 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 or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Tables 17 and 18 give estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

In table 17, *hydrologic soil groups* are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils 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, 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 or 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 permanent 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 two hydrologic groups in table 17, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is 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, nor is water in swamps and marshes.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent 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); and *frequent* that it occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

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.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 are depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

In table 18, *depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves 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 in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel 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 is also expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA, 1975). 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. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven 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 Mollisol.

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 Aquoll (*Aqu*, meaning water, plus *oll*, from Mollisol).

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; 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 Argiaquolls (*Argi*, meaning translocated clay, plus *aquolls*, the suborder of the Mollisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic 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 known kind of soil. 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 Argiaquolls.

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, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, montmorillonitic, mesic Typic Argiaquolls.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other 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" (USDA, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (USDA, 1975). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Ambraw Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow to moderately rapid in the solum
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls
Taxadjunct features: Ambraw loam, occasionally flooded, is not stratified and does not have an irregular decrease in organic carbon, which is defined for the series. These differences, however, do not significantly affect the use or behavior of the soil.

Typical Pedon

Ambraw loam, occasionally flooded, 2,975 feet west and 1,400 feet north of the southeast corner of sec. 3, T. 5 S., R. 7 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak coarse subangular blocky structure; friable; common fine and very fine roots; few medium iron and manganese concretions; neutral; clear smooth boundary.

A—8 to 13 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium and fine subangular blocky structure; friable; common very fine roots; few medium iron and manganese concretions; neutral; clear smooth boundary.

Bg1—13 to 20 inches; dark gray (5Y 4/1) sandy loam; few fine prominent dark yellowish brown (10YR 4/6) mottles; moderate fine prismatic structure; friable; common very fine roots; few medium iron and manganese concretions and stains; neutral; gradual smooth boundary.

Bg2—20 to 35 inches; dark gray (5Y 4/1) sandy loam; few fine prominent dark yellowish brown (10YR 4/6) mottles; moderate medium prismatic structure; friable; few very fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few medium iron and manganese concretions and stains; neutral; gradual smooth boundary.

Bg3—35 to 46 inches; gray (5Y 5/1) sandy loam; few fine and medium prominent dark yellowish brown (10YR 4/6) mottles; weak medium prismatic structure; friable; few very fine roots; few coarse and medium iron and manganese concretions and stains; neutral; gradual smooth boundary.

BCg—46 to 60 inches; gray (5Y 5/1) sandy loam; few fine and medium prominent dark yellowish brown (10YR 4/6) mottles; weak coarse subangular blocky structure; friable; few very fine roots; few coarse and medium iron and manganese concretions and stains; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 22 inches

Ap horizon:
Chroma—1 or 2
Texture—loam, silty clay loam, or silt loam

Bg horizon:
Hue—10YR, 5Y, or 2.5Y
Value—3 to 5
Chroma—1 or 2
Texture—loam, silt loam, clay loam, silty clay loam, sandy clay loam, fine sandy loam, or sandy loam

BCg horizon:
Hue—10YR, 5Y, or 2.5Y
Texture—loamy sand, loamy fine sand, loam, or sandy loam; strata with less clay, less sand, or both in many pedons

Atterberry Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Uplands
Parent material: Loess
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, mesic Udollic Ochraqualfs

Typical Pedon

Atterberry silt loam, 2,640 feet west and 600 feet north of the southeast corner of sec. 31, T. 5 S., R. 4 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, gray (10YR 5/1) dry; weak very fine granular structure; very friable; many fine roots; neutral; clear smooth boundary.

E—8 to 14 inches; dark grayish brown (10YR 4/2) silt loam; few fine faint grayish brown (10YR 5/2) mottles; weak thin platy structure parting to weak very fine subangular blocky; friable; few fine roots; neutral; clear smooth boundary.

Bt1—14 to 18 inches; brown (10YR 4/3) silt loam; few fine faint dark grayish brown (10YR 4/2) mottles;

moderate fine subangular blocky structure; friable; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common faint dark brown (10YR 3/3) organic coatings on faces of peds; neutral; clear smooth boundary.

Bt2—18 to 24 inches; brown (10YR 4/3) silt loam; common medium faint grayish brown (10YR 5/2) and common medium distinct yellowish brown (10YR 5/6) mottles; moderate fine prismatic structure parting to moderate fine subangular blocky; friable; common faint dark yellowish brown (10YR 3/4) and dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct pale brown (10YR 6/3) silt coatings on faces of peds; many faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; moderately acid; clear smooth boundary.

Bt3—24 to 35 inches; brown (10YR 4/3) silty clay loam; common medium distinct dark yellowish brown (10YR 4/6) and common fine faint grayish brown (10YR 5/2) mottles; moderate fine prismatic structure parting to moderate fine subangular blocky; firm; common distinct dark yellowish brown (10YR 4/4) and dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; strongly acid; clear smooth boundary.

Btg—35 to 49 inches; grayish brown (10YR 5/2) silt loam; many medium distinct dark yellowish brown (10YR 4/6) and few fine faint brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; gradual smooth boundary.

C—49 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; many medium distinct gray (10YR 5/1) mottles; massive; friable; very few fine roots; few faint dark yellowish brown (10YR 3/4) clay films in root channels; few distinct black (10YR 2/1) organic coatings in root channels; slightly acid.

Range in Characteristics

Ap horizon:
Value—1 or 2

E horizon:
Value—4 to 6

Bt horizon:
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam or silt loam

C horizon:
Value—4 to 6
Chroma—1 to 4

Baylis Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Uplands
Parent material: 20 to 40 inches of loess over cherty limestone residuum
Slope range: 10 to 30 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Baylis silt loam, 15 to 30 percent slopes, eroded, 100 feet west and 1,750 feet north of the southeast corner of sec. 17, T. 4 S., R. 6 W.

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silt loam, brown (10YR 5/3) dry; moderate medium granular structure; friable; many fine and medium roots; moderately acid; abrupt smooth boundary.

Bt1—7 to 16 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate fine subangular blocky structure; firm; many fine and medium roots; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds; moderately acid; clear wavy boundary.

Bt2—16 to 22 inches; brown (7.5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; common medium and coarse roots; many faint dark brown (7.5R 3/4) clay films on faces of peds; strongly acid; clear wavy boundary.

2Bt3—22 to 42 inches; yellowish red (5YR 4/6) silty clay loam; moderate coarse subangular blocky structure; firm; few coarse roots; many distinct reddish brown (5YR 4/4) and dark brown (7.5YR 3/4) clay films on faces of peds; common fine and medium iron concretions; about 10 percent chert pebbles; strongly acid; gradual wavy boundary.

2Bt4—42 to 60 inches; yellowish red (5YR 4/6) cherty silty clay loam; moderate coarse subangular blocky structure; very firm; few coarse roots; common distinct reddish brown (5YR 4/4) and dark brown (7.5YR 3/4) clay films on faces of peds; common fine and medium iron concretions; about 20 percent chert pebbles; moderately acid.

Range in Characteristics

Thickness of the loess: 20 to 40 inches

Ap horizon:
Value—4 or 5
Chroma—3 or 4

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6

2Bt horizon:
Hue—2.5YR to 7.5YR
Value—4 or 5
Chroma—4 to 6
Texture—silty clay loam, silty clay, or clay or the cherty or very cherty analogs of these textures

Beaucoup Series

Depth class: Very deep
Drainage class: Poorly drained and very poorly drained
Permeability: Moderately slow
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, mesic Fluvaquentic Haplaquolls

Typical Pedon

Beaucoup silty clay loam, occasionally flooded, 2,640 feet south and 20 feet west of the northeast corner of sec. 14, T. 4 S., R. 8 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak very fine granular structure; friable; few fine roots; neutral; clear smooth boundary.
A—7 to 12 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; firm; slightly alkaline; clear smooth boundary.
Bg1—12 to 23 inches; dark gray (10YR 4/1) silty clay loam; common medium prominent dark yellowish brown (10YR 4/6) mottles; moderate fine prismatic structure parting to strong fine subangular blocky; firm; very dark gray (10YR 3/1) organic coatings on faces of peds; neutral; gradual smooth boundary.
Bg2—23 to 46 inches; dark gray (10YR 4/1) silty clay loam; common medium prominent dark yellowish brown (10YR 4/6) mottles; weak fine prismatic structure parting to moderate fine subangular blocky; firm; very dark gray (10YR 3/1) organic coatings on faces of peds; neutral; gradual smooth boundary.
Bg3—46 to 60 inches; dark gray (10YR 4/1) silty clay loam; common medium prominent dark yellowish brown (10YR 4/6) mottles; weak fine prismatic structure; firm; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches

A horizon:
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam or silt loam

Bg horizon:
Hue—10YR, 5Y, or 2.5Y
Value—4 or 5
Chroma—1 or 2

Blair Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landscape: Uplands
Parent material: Thin layer of loess and the underlying pedisediment or glacial till
Slope range: 5 to 15 percent
Taxonomic class: Fine-silty, mixed, mesic Aquic Hapludalfs

Typical Pedon

Blair silt loam, 5 to 10 percent slopes, eroded, 330 feet east and 450 feet north of the center of sec. 16, T. 4 S., R. 5 W.

Ap—0 to 5 inches; mixed dark brown (10YR 4/3) (60 percent) and brown (10YR 4/3) (40 percent) silt loam, brown (10YR 5/3) dry; weak medium subangular blocky structure; firm; common fine roots; few fine and medium manganese concretions; slightly acid; clear smooth boundary.
Bt1—5 to 11 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; few distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; common faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine and medium concretions of manganese oxide; moderately acid; clear smooth boundary.
Bt2—11 to 20 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine and medium distinct grayish brown (10YR 5/2) mottles;

moderate medium subangular blocky structure; firm; few very fine roots; common faint dark yellowish brown (10YR 4/6) clay films on faces of peds; very few distinct pale brown (10YR 6/3) silt coatings on faces of peds; few faint dark brown (10YR 3/3) and distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine and medium concretions of iron and manganese oxides; moderately acid; gradual smooth boundary.

Bt3—20 to 35 inches; yellowish brown (10YR 5/4) silty clay loam; common faint grayish brown (10YR 5/2) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; few very fine roots; many distinct yellowish brown (10YR 5/6) clay films on faces of peds; very few distinct pale brown (10YR 6/3) silt coatings on faces of peds; few distinct dark brown (10YR 3/3) and very dark grayish brown (10YR 3/2) organic coatings lining pores; few fine and medium concretions of manganese and iron oxides; moderately acid; gradual smooth boundary.

Btg1—35 to 48 inches; grayish brown (2.5Y 5/2) clay loam; many medium and coarse prominent dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; very firm; few very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; very few distinct very dark grayish brown (10YR 3/2) organic coatings lining pores; few medium and coarse concretions of iron and manganese oxides; moderately acid; gradual smooth boundary.

2Btg2—48 to 60 inches; gray (5Y 5/1) clay loam; many medium and coarse prominent dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; very firm; common distinct light brownish gray (2.5Y 6/2) clay films on faces of peds; few medium iron and manganese stains; slightly acid.

Range in Characteristics

Thickness of the loess: 0 to 20 inches

Ap horizon:
- Value—4 or 5
- Chroma—mainly 2 or 3; the range includes 4 in eroded pedons that have subsoil material mixed into the Ap horizon
- Texture—silt loam or silty clay loam

Bt horizon:
- Hue—10YR or 2.5Y
- Value—4 to 6
- Chroma—2 to 4
- Texture—silty clay loam, silt loam, clay loam, or loam

Btg or 2Btg horizon:
- Hue—10YR, 2.5Y, or 5Y
- Value—4 to 6
- Chroma—1 to 6
- Texture—clay loam, silty clay loam, or loam

Ceresco Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Coarse-loamy, mixed, mesic Fluvaquentic Hapludolls

Typical Pedon

Ceresco loam, occasionally flooded, 65 feet south and 2,575 feet east of the center of sec. 16, T. 4 S., R. 8 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine granular structure; very friable; few fine roots; slightly alkaline; clear smooth boundary.

A—7 to 14 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; few fine and medium distinct yellowish brown (10YR 5/6) and dark brown (7.5YR 3/4) mottles; moderate fine subangular blocky structure; very friable; few fine roots; common faint very dark gray (10YR 3/1) organic coatings on faces of peds; neutral; clear smooth boundary.

Bw1—14 to 27 inches; brown (10YR 5/3) fine sandy loam; few medium faint dark grayish brown (10YR 4/2) and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very friable; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; gradual smooth boundary.

Bw2—27 to 42 inches; brown (10YR 5/3) fine sandy loam; common medium faint dark yellowish brown (10YR 3/4) and few medium distinct dark gray (10YR 4/1) mottles; weak medium subangular blocky structure; very friable; neutral; gradual smooth boundary.

C1—42 to 52 inches; grayish brown (10YR 5/2) fine sandy loam; few medium faint gray (10YR 5/1) and common medium distinct dark yellowish

brown (10YR 3/6) mottles; massive; very friable; slightly acid; gradual smooth boundary.

C2—52 to 60 inches; dark grayish brown (10YR 4/2) fine sandy loam with strata of fine sand and silt loam; common medium distinct dark yellowish brown (10YR 3/6) mottles; massive; very friable; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches

A horizon:
Texture—loam or sandy loam

Bw horizon:
Value—4 or 5
Chroma—2 or 3
Texture—sandy loam or fine sandy loam

C horizon:
Value—4 to 6
Chroma—2 or 3
Texture—fine sandy loam with strata of fine sand, sandy loam, or silt loam

Clarksdale Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landscape: Uplands
Parent material: Loess
Slope range: 0 to 5 percent
Taxonomic class: Fine, montmorillonitic, mesic Udollic Ochraqualfs

Typical Pedon

Clarksdale silt loam, 0 to 2 percent slopes, 2,508 feet west and 2,376 feet south of the northeast corner of sec. 1, T. 3 S., R. 4 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; many very fine and common fine roots; few fine manganese concretions; slightly acid; abrupt smooth boundary.

E—9 to 12 inches; grayish brown (10YR 5/2) silt loam; common fine distinct yellowish brown (10YR 5/4) mottles; weak medium platy structure parting to moderate medium granular; very friable; few fine roots; few medium manganese concretions; strongly acid; clear smooth boundary.

Bt—12 to 21 inches; brown (10YR 4/3) silty clay loam; many fine and medium distinct very dark yellowish brown (10YR 4/6) mottles; moderate fine prismatic structure parting to moderate fine angular blocky; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine and medium manganese concretions; strongly acid; gradual smooth boundary.

Btg1—21 to 35 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium prismatic structure; many fine and medium distinct dark yellowish brown (10YR 4/6) mottles; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine and medium manganese concretions; strongly acid; gradual smooth boundary.

Btg2—35 to 45 inches; gray (10YR 6/1) silty clay loam; common fine and medium prominent dark yellowish brown (10YR 4/6) mottles; weak coarse subangular blocky structure; firm; few fine roots; few fine and medium faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine and medium manganese concretions; moderately acid; gradual smooth boundary.

BCg—45 to 60 inches; gray (10YR 6/1) silt loam; many medium and coarse prominent dark yellowish brown (10YR 4/6) mottles; weak coarse subangular blocky structure; friable; few fine and medium manganese concretions; moderately acid.

Range in Characteristics

Ap horizon:
Chroma—1 or 2

E horizon:
Value—5 or 6
Chroma—1 or 2

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4

Coffeen Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Coarse-silty, mixed, mesic Fluvaquentic Hapludolls

Typical Pedon

Coffeen silt loam, occasionally flooded, 1,680 feet south and 1,170 feet west of the northeast corner of sec. 14, T. 4 S., R. 8 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine granular structure; very friable; few fine roots; neutral; clear smooth boundary.

A—8 to 14 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; very friable; few coarse roots; neutral; clear smooth boundary.

Bw—14 to 24 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine subangular blocky structure; friable; common faint dark brown (10YR 3/3) organic coatings on faces of peds; neutral; clear smooth boundary.

Bg—24 to 30 inches; dark grayish brown (10YR 4/2) silt loam; few medium faint brown (10YR 4/3) and dark gray (10YR 4/1) mottles; moderate fine prismatic structure; friable; few faint dark brown (10YR 3/3) organic coatings on faces of peds; neutral; clear smooth boundary.

BCg—30 to 45 inches; dark grayish brown (10YR 4/2) silt loam; common medium faint brown (10YR 4/3) and dark gray (10YR 4/2) mottles; weak medium subangular blocky structure; very friable; neutral; gradual smooth boundary.

Cg1—45 to 58 inches; gray (10YR 5/1) silt loam; few medium distinct brown (10YR 4/3) and common medium faint dark grayish brown (10YR 4/2) mottles; massive; very friable; neutral; gradual smooth boundary.

Cg2—58 to 60 inches; gray (10YR 5/1) silt loam; common medium distinct brown (10YR 4/3) mottles; massive; very friable; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches

A horizon:
Value—2 or 3
Chroma—1 or 2

Bw or Bg horizon:
Chroma—1 or 2

Cg horizon:
Value—4 or 5
Chroma—1 or 2

Darwin Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Very slow
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine, montmorillonitic, mesic Vertic Haplaquolls

Typical Pedon

Darwin silty clay loam, occasionally flooded, 1,565 feet east and 200 feet south of the center of sec. 10, T. 3 S., R. 2 W.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silty clay loam, dark grayish brown(10YR 4/2) dry; moderate fine angular blocky structure; firm; few fine roots: slightly acid; clear smooth boundary.

A—8 to 13 inches; very dark gray (2.5Y 3/0) silty clay loam, dark grayish brown (10YR 4.2) dry; few fine prominent dark yellowish brown (10YR 4/6) and few fine distinct light olive brown (2.5Y 5/4) mottles; moderate fine angular blocky structure; firm; few fine roots; few fine rounded concretions of iron and manganese oxides; moderately acid; clear smooth boundary.

Bg1—13 to 18 inches; dark gray (N 4/0) silty clay; few fine distinct light olive brown (2.5Y 5/4) and common fine prominent dark yellowish brown (10YR 4/6) mottles; moderate fine and medium angular blocky structure; firm; few fine roots; common distinct dark olive gray (5Y 3/1) pressure faces; few fine rounded concretions of iron and manganese oxides; moderately acid; clear smooth boundary.

Bg2—18 to 24 inches; dark gray (N 4/0) silty clay; common fine distinct light olive brown (2.5Y 5/4) and many fine prominent yellowish brown (10YR 5/8) mottles; moderate fine and medium angular blocky structure; firm; few fine roots; common distinct dark olive gray (5Y 3/1) pressure faces; few fine rounded concretions of iron and manganese oxides; moderately acid; clear smooth boundary.

Bg3—24 to 35 inches; dark gray (N 4/0) silty clay; common fine distinct light olive brown (2.5Y 5/4) and few fine prominent yellowish brown (10YR 5/8) mottles; moderate fine and medium angular blocky structure; firm; few fine roots; common distinct dark olive gray (5Y 3/1) pressure faces; few fine rounded concretions of iron and manganese oxides; slightly acid; clear smooth boundary.

Bg4—35 to 48 inches; dark gray (5Y 4/1) silty clay; common fine distinct light olive brown (2.5Y 5/4) and few fine prominent dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few distinct dark olive gray (5Y 3/1) pressure faces; few fine and medium rounded concretions of iron and manganese oxides; slightly acid; clear smooth boundary.

BCg—48 to 60 inches; dark gray (5Y 4/1) silty clay loam; common fine distinct light olive brown (2.5Y 5/4) and few fine prominent dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine rounded concretions of iron and manganese oxides; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches

Ap horizon:
Hue—10YR, 2.5Y, or neutral
Value—2 or 3
Chroma—0 or 1
Texture—silty clay or silty clay loam

Bg, BCg, or Cg horizon:
Hue—10YR, 2.5Y, 5Y, or neutral
Value—3 to 6
Chroma—0 to 2
Texture—silty clay, silty clay loam, or clay

Downs Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Uplands and high stream terraces
Parent material: Loess
Slope range: 2 to 10 percent
Taxonomic class: Fine-silty, mixed, mesic Mollic Hapludalfs

Typical Pedon

Downs silt loam, 2 to 5 percent slopes, 1,740 feet south and 1,740 feet west of the northeast corner of sec. 13, T. 6 S., R. 5 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium granular structure; friable; many fine roots; few faint grayish brown (10YR 5/2) silt coatings lining pores; neutral; abrupt smooth boundary.

BE—9 to 15 inches; brown (10YR 4/3) silt loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; friable; many fine roots; neutral; clear smooth boundary.

Bt1—15 to 24 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; friable; many fine roots; common distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; few distinct grayish brown (10YR 5/2) silt coatings lining pores; neutral; clear smooth boundary.

Bt2—24 to 34 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct strong brown (7.5YR 4/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; friable; common fine roots; common distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; common fine manganese concretions; neutral; gradual smooth boundary.

Bt3—34 to 47 inches; dark yellowish brown (10YR 4/4) silt loam; few medium distinct grayish brown (10YR 5/2) and common fine distinct strong brown (7.5YR 4/6) mottles; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; friable; common fine roots; few distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; common fine concretions of iron and manganese oxides; neutral; gradual smooth boundary.

BC—47 to 57 inches; dark yellowish brown (10YR 4/4) silt loam; many medium distinct light brownish gray (10YR 6/2) and common medium distinct strong brown (7.5YR 4/6) mottles; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; friable; common fine roots; few distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; very few distinct black (10YR 2/1) organic coatings lining pores; common fine concretions of iron and manganese oxides; moderately acid; gradual smooth boundary.

C—57 to 60 inches; brown (10YR 5/3) silt loam; common medium faint light brownish gray (10YR 6/2) and distinct dark brown (7.5YR 3/4) mottles; massive; friable; few fine roots; very few distinct black (10YR 2/1) organic coatings lining pores; common fine iron and manganese concretions; slightly acid.

Range in Characteristics

Bt horizon:
Chroma—3 or 4
Value—4 or 5
Texture—silty clay loam or silt loam

C horizon:
Value—4 or 5
Chroma—2 to 4

Drury Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Terraces
Parent material: Local alluvium
Slope range: 2 to 10 percent
Taxonomic class: Fine-silty, mixed, mesic Dystric Eutrochrepts

Typical Pedon

Drury silt loam, 2 to 5 percent slopes, 1,660 feet west and 1,848 feet south of the northeast corner of sec. 6, T. 7 S., R. 4 W.

Ap—0 to 4 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate fine granular structure; very friable; common very fine roots; neutral; abrupt smooth boundary.
A—4 to 10 inches; dark brown (10YR 4/3) silt loam; moderate fine subangular blocky structure parting to moderate fine granular; very friable; common very fine roots; common faint dark brown (10YR 3/3) organic coatings on faces of peds; slightly acid; clear smooth boundary.
E—10 to 16 inches; dark brown (10YR 4/3) silt loam; moderate thin platy structure; very friable; few very fine roots; common faint dark brown (10YR 3/3) organic coatings on horizontal faces of peds; neutral; clear smooth boundary.
Bw1—16 to 30 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few very fine roots; common fine distinct white (10YR 8/2) silt coatings on faces of peds; neutral; gradual smooth boundary.
Bw2—30 to 45 inches; dark yellowish brown (10YR 4/4) silt loam; weak coarse subangular blocky structure; friable; few very fine roots; common fine distinct white (10YR 8/2) silt coatings on faces of peds; neutral; gradual smooth boundary.
C—45 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; massive; friable; common fine distinct white (10YR 8/2) silt coatings lining pores; neutral.

Range in Characteristics

Ap or A horizon:
Value—3 or 4
Chroma—3 or 4

Bw horizon:
Value—4 or 5
Chroma—3 or 4

C horizon:
Value—4 or 5
Chroma—3 or 4

Dupo Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and slow in the lower part
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Coarse-silty over clayey, mixed, nonacid, mesic Aquic Udifluvents

Typical Pedon

Dupo silt loam, occasionally flooded, 1,200 feet west and 2,050 feet north of the southeast corner of sec. 6, T. 5 S., R. 6 W.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common coarse and many fine roots; neutral; abrupt smooth boundary.
C—11 to 22 inches; brown (10YR 5/3) silt loam; common fine faint grayish brown (10YR 5/2) mottles; massive; friable; common fine and few medium roots; common distinct dark grayish brown (10YR 4/2) organic coatings in root channels; neutral; clear smooth boundary.
2Ab1—22 to 29 inches; very dark gray (10YR 3/1) silty clay loam; moderate medium subangular blocky structure; firm; common fine and few medium roots; neutral; clear smooth boundary.
2Ab2—29 to 41 inches; very dark gray (10YR 3/1) silty clay; moderate medium subangular blocky structure; very firm; common fine roots; neutral; gradual smooth boundary.
2Ab3—41 to 56 inches; very dark gray (10YR 3/1) silty clay; moderate medium prismatic structure; very firm; few fine roots; neutral; gradual smooth boundary.
2Bgb—56 to 60 inches; dark gray (10YR 4/1) silty clay; weak coarse prismatic structure; very firm; neutral.

Range in Characteristics

Depth to the buried soil: 20 to 40 inches

Ap horizon:
Value—4 or 5
Chroma—1 to 3

C horizon:
Value—3 to 6
Chroma—1 to 3

2Ab horizon:
Value—2 or 3
Chroma—1 or 2

Elco Series

Depth class: Very deep
Drainage class: Well drained or moderately well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landscape: Uplands
Parent material: 20 to 40 inches of loess and the underlying pedisediment or glacial till
Slope range: 10 to 25 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Elco silt loam, 15 to 25 percent slopes, eroded, 1,450 feet west and 1,750 feet south of the northeast corner of sec. 2, T. 4 S., R. 4 W.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate medium granular structure; friable; common fine roots; moderately acid; abrupt smooth boundary.

Bt1—6 to 11 inches; dark yellowish brown (10YR 4/6) silt loam; moderate medium and fine subangular blocky structure; friable; common fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—11 to 21 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coatings on faces of peds; strongly acid; clear smooth boundary.

Bt3—21 to 33 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular blocky; firm; few fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common distinct light gray (10YR 7/2) silt coatings on faces of peds; strongly acid; clear smooth boundary.

2Bt4—33 to 49 inches; strong brown (7.5YR 4/6) silt loam; many medium prominent light brownish gray (10YR 6/2) mottles; moderate coarse subangular blocky structure parting to moderate medium subangular blocky; firm; very few fine roots; few distinct dark yellowish brown (10YR 4/4) clay films lining pores; few distinct light gray (10YR 7/2) silt coatings on faces of peds; few medium soft iron accumulations; about 25 percent sand; few pebbles; moderately acid; clear smooth boundary.

2Bt5—49 to 60 inches; strong brown (7.5YR 4/6) loam; many medium prominent light brownish gray (10YR 6/2) mottles; moderate coarse and medium subangular blocky structure; firm; few distinct dark yellowish brown (10YR 4/4) clay films lining pores; few medium dark yellowish brown (10YR 7/2) silt coatings on faces of peds; many medium soft iron accumulations; about 2 percent pebbles; moderately acid.

Range in Characteristics

Thickness of the loess: 20 to 40 inches

Ap horizon:
Value—4 or 5
Chroma—3 or 4
Texture—silt loam or silty clay loam

Bt horizon:
Value—4 or 5
Chroma—3 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—1 to 6
Texture—silt loam, loam, clay loam, or silty clay loam

El Dara Series

Depth class: Very deep
Drainage class: Well drained or moderately well drained
Permeability: Moderate
Landscape: Uplands
Parent material: Glacial outwash
Slope range: 10 to 50 percent
Taxonomic class: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon

El Dara fine sandy loam, 15 to 30 percent slopes, eroded, 500 feet west and 1,290 feet south of the northeast corner of sec. 1, T. 3 S., R. 4 W.

Ap—0 to 4 inches; dark brown (10YR 3/3) fine sandy loam, brown (10YR 5/3) dry; weak medium granular structure; friable; few fine roots; neutral; clear smooth boundary.

E—4 to 10 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine subangular blocky structure; friable; few fine roots; strongly acid; clear smooth boundary.

BE—10 to 16 inches; dark yellowish brown (10YR 4/6) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

Bt1—16 to 26 inches; strong brown (7.5YR 4/6) fine sandy loam; weak fine subangular blocky structure; friable; very few distinct strong brown (7.5YR 5/6) clay films on faces of peds; few fine roots; very strongly acid; clear smooth boundary.

Bt2—26 to 34 inches; strong brown (7.5YR 5/6) fine sandy loam; weak fine subangular blocky structure; friable; very few distinct strong brown (7.5YR 4/6) clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt3—34 to 44 inches; strong brown (7.5YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt4—44 to 60 inches; strong brown (7.5YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; common distinct strong brown (7.5YR 4/6) clay films on faces of peds; very strongly acid.

Range in Characteristics

A horizon:
Value—3 to 5
Chroma—2 to 4
Texture—sandy loam or fine sandy loam

E horizon:
Value—4 to 6
Chroma—2 to 6
Texture—fine sandy loam or loam

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—1 to 6
Texture—sandy clay loam, clay loam, loam, sandy loam, or fine sandy loam

Elizabeth Series

Depth class: Shallow
Drainage class: Somewhat excessively drained
Permeability: Moderate in the upper part and slow or moderately slow in the lower part
Landscape: Uplands
Parent material: Loess and fractured limestone
Slope range: 30 to 60 percent
Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Hapludolls

Typical Pedon

Elizabeth very channery silt loam, 30 to 60 percent slopes, 1,300 feet east and 900 feet south of the northwest corner of sec. 5, T. 5 S., R. 2 W.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) very channery silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; common coarse and medium roots; about 15 percent flagstones and 45 percent channers; neutral; clear wavy boundary.

A2—4 to 16 inches; dark brown (10YR 3/3) very channery silt loam, brown (10YR 5/32) dry; moderate medium granular structure; friable; common coarse and medium roots; about 15 percent flagstones and 30 percent channers; slight effervescence; slightly alkaline; abrupt wavy boundary.

R—16 inches; fractured dolomitic limestone bedrock.

Range in Characteristics

Depth to bedrock: 7 to 20 inches

A horizon:
Value—2 or 3
Chroma—1 to 3

Elsah Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Loamy alluvium containing angular gravel
Slope range: 0 to 2 percent
Taxonomic class: Loamy-skeletal, mixed, nonacid, mesic Typic Udifluvents

Typical Pedon

Elsah gravelly loam, frequently flooded, 1,900 feet south and 1,450 feet west of the northeast corner of sec. 8, T. 5 S., R. 6 W.

A—0 to 6 inches; brown (10YR 5/3) (70 percent) and dark brown (10YR 3/3) (30 percent) gravelly loam, light yellowish brown (10YR 6/4) dry; weak moderate granular structure; friable; many fine and common coarse roots; about 20 percent chert pebbles; neutral; clear wavy boundary.

C1—6 to 12 inches; brown (10YR 5/3) very gravelly loam; massive; friable; common fine and few coarse roots; about 25 percent chert pebbles and 15 percent cobbles; slightly alkaline; slight effervescence; clear wavy boundary.

C2—12 to 29 inches; yellowish brown (10YR 5/6) very gravelly sandy loam; massive; very friable; few medium and coarse roots; about 40 percent chert pebbles and 15 percent cobbles; slightly alkaline; gradual wavy boundary.

C3—29 to 42 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam; massive; friable; few fine and coarse roots; about 40 percent chert pebbles and 10 percent cobbles; slightly alkaline; clear wavy boundary.

C4—42 to 56 inches; mottled yellowish brown (10YR 5/6) and brown (10YR 5/3) gravelly loam; massive; friable; about 20 percent chert pebbles and 5 percent cobbles; slightly alkaline; slight effervescence; clear wavy boundary.

C5—56 to 60 inches; yellowish brown (10YR 5/6) very gravelly sandy loam; massive; very friable; about 45 percent chert pebbles and 10 percent cobbles; neutral.

Range in Characteristics

A horizon:
Value—3 to 6

C horizon:
Value—4 or 5
Chroma—3 to 6
Texture—gravelly sandy loam, gravelly loam, silt loam, or gravelly silt loam

Fayette Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Uplands and terraces
Parent material: Loess
Slope range: 2 to 30 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Fayette silt loam, 10 to 15 percent slopes, eroded, 1,240 feet west and 140 feet south of the northeast corner of sec. 2, T. 7 S., R. 4 W.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; common fine roots; neutral; clear smooth boundary.

BE—6 to 11 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine subangular blocky structure; friable; common fine roots; neutral; clear smooth boundary.

Bt1—11 to 27 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine prismatic structure parting to moderate fine subangular blocky; firm; few fine roots; many faint brown (10YR 4/3) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—27 to 34 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine prismatic structure; firm; few fine roots; common faint brown (10YR 4/3) clay films on faces of peds; common faint brown (10YR 5/3) silt coatings on faces of peds; few fine iron and manganese concretions; strongly acid; clear smooth boundary.

Bt3—34 to 44 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine prismatic structure; friable; many faint brown (10YR 4/3) clay films on faces of peds; few fine iron and manganese concretions; strongly acid; gradual smooth boundary.

BC—44 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium prismatic structure; friable; strongly acid.

Range in Characteristics

Ap horizon:
Chroma—2 to 4
Texture—silt loam or silty clay loam

E horizon (if it occurs):
Value—4 or 5
Chroma—3 or 4

Bt horizon:
Value—4 or 5
Chroma—3 to 6

Gosport Series

Depth class: Moderately deep
Drainage class: Moderately well drained
Permeability: Very slow
Landscape: Uplands

Parent material: Thin mantle of loess and the underlying shale residuum
Slope range: 15 to 60 percent
Taxonomic class: Fine, illitic, mesic Typic Dystrochrepts

Typical Pedon

Gosport silt loam, 30 to 60 percent slopes, 420 feet east and 120 feet north of the center of sec. 8, T. 3 S., R. 4 W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, brown (10YR 5/3) dry; moderate medium granular structure; friable; many fine and medium roots; neutral; abrupt smooth boundary.
E—3 to 5 inches; yellowish brown (10YR 5/4) silt loam; moderate medium platy structure; friable; common fine roots; neutral; abrupt smooth boundary.
Bw1—5 to 10 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine and medium subangular blocky structure; firm; common fine and medium roots; strongly acid; clear smooth boundary.
Bw2—10 to 21 inches; light olive brown (2.5Y 5/4) silty clay; very few fine faint strong brown (7.5YR 5/6) mottles; weak fine and medium subangular blocky structure; firm; few fine and medium roots; strongly acid; gradual smooth boundary.
Bw3—21 to 28 inches; light olive brown (2.5Y 5/4) silty clay; few fine faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; strongly acid; gradual wavy boundary.
Cr—28 to 60 inches; olive brown (2.5Y 4/4) clay shale with strata of very dark gray (N 3/0) lignite; common fine and medium distinct strong brown (7.5YR 5/6) and common medium distinct dark gray (2.5Y 4/1) mottles; weak medium platy rock structure; extremely firm; very few fine roots; slightly acid.

Range in Characteristics

Depth to unweathered shale: 20 to 40 inches

A horizon:
Value—3 or 4
Texture—silt loam, loam, or silty clay loam

E horizon:
Value—4 or 5
Texture—silt loam or silty clay loam

Bw horizon:
Hue—10YR to 5Y
Chroma—3 or 4
Texture—silty clay or silty clay loam

Cr horizon:
Hue—2.5Y or 5Y
Value—4 or 5
Chroma—1 to 3

Goss Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Uplands
Parent material: Cherty limestone residuum
Slope range: 15 to 60 percent
Taxonomic class: Clayey-skeletal, mixed, mesic Typic Paleudalfs

Typical Pedon

Goss gravelly silt loam, 30 to 60 percent slopes, 2,000 feet west and 1,800 feet south of the northeast corner of sec. 27, T. 6 S., R. 5 W.

A—0 to 5 inches; dark brown (10YR 4/3) gravelly silt loam, light yellowish brown (10YR 6/4) dry; weak coarse subangular blocky structure parting to moderate fine granular; friable; many fine roots; 20 percent chert pebbles; slightly acid; clear wavy boundary.
Bt1—5 to 13 inches; brown (7.5YR 5/4) extremely gravelly silty clay loam; moderate fine subangular blocky structure; firm; many fine and common medium roots; many distinct strong brown (7.5YR 4/6) and common distinct reddish brown (5YR 4/4) clay films on faces of peds; 65 percent chert pebbles; strongly acid; clear wavy boundary.
Bt2—13 to 22 inches; yellowish red (5YR 5/6) gravelly silty clay; moderate coarse subangular blocky structure parting to strong fine subangular blocky; firm; common fine and few medium roots; many distinct reddish brown (2.5YR 4/4) clay films on faces of peds; common concretions of manganese oxide; 25 percent chert pebbles; strongly acid; gradual wavy boundary.
Bt3—22 to 39 inches; yellowish red (5YR 5/6) very gravelly silty clay; strong fine and medium subangular blocky structure; firm; common fine roots; many distinct reddish brown (2.5YR 4/4) clay films on faces of peds; common concretions of manganese oxide; 40 percent chert pebbles; strongly acid; gradual wavy boundary.
Bt4—39 to 60 inches; yellowish red (5YR 5/6) extremely gravelly silty clay; strong coarse subangular blocky structure parting to strong medium and fine subangular blocky; firm; few fine roots; common distinct reddish brown (2.5YR

4/4) clay films on faces of peds; common concretions of manganese oxide; 65 percent chert pebbles; strongly acid.

Range in Characteristics

A horizon:
Hue—10YR or 7.5YR
Value—3 or 4
Chroma—2 to 4
Texture—gravelly silt loam

Bt horizon:
Hue—2.5YR to 7.5YR
Value—4 or 5
Chroma—4 to 8
Texture—the gravelly to extremely gravelly analogs of silt loam, silty clay loam, silty clay, or clay

Hamburg Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderate
Landscape: Uplands
Parent material: Loess
Slope range: 20 to 65 percent
Taxonomic class: Coarse-silty, mixed (calcareous), mesic Typic Udorthents

Typical Pedon

Hamburg silt, 30 to 65 percent slopes, 1,100 feet west and 1,400 feet south of the northeast corner of sec. 6, T. 5 S., R. 6 W.

A—0 to 4 inches; dark brown (10YR 4/3) silt, pale brown (10YR 6/3) dry; moderate medium subangular blocky structure; friable; many fine roots; slight effervescence; moderately alkaline; clear smooth boundary.
AC—4 to 9 inches; yellowish brown (10YR 5/4) silt; weak medium subangular blocky structure; friable; many fine roots; strong effervescence; moderately alkaline; clear wavy boundary.
C—9 to 60 inches; yellowish brown (10YR 5/4) silt; massive; friable; common fine roots; strong effervescence; strongly alkaline.

Range in Characteristics

A horizon:
Value—3 or 4

C horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—3 or 4

Haymond Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Coarse-silty, mixed, nonacid, mesic Typic Udifluvents

Typical Pedon

Haymond silt loam, frequently flooded, 1,100 feet east and 1,300 feet south of the northwest corner of sec. 7, T. 5 S., R. 2 W.

Ap—0 to 9 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak moderate subangular blocky structure; friable; few fine roots; neutral; clear smooth boundary.
Bw1—9 to 16 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; few fine roots; neutral; clear smooth boundary.
Bw2—16 to 31 inches; brown (10YR 5/3) silt loam; weak coarse subangular blocky structure; friable; few fine roots; few faint pale brown (10YR 6/3) silt coatings on faces of peds; neutral; gradual smooth boundary.
Bw3—31 to 40 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; few faint pale brown (10YR 6/3) silt coatings on faces of peds; common iron and manganese accumulations; neutral; gradual smooth boundary.
C—40 to 60 inches; brown (10YR 5/3) silt loam; few fine faint grayish brown (10YR 5/2) mottles; massive; friable; few iron and manganese accumulations; few iron stains; neutral.

Range in Characteristics

Ap horizon:
Value—4 or 5
Chroma—3 or 4

Bw horizon:
Value—4 or 5
Chroma—3 or 4

C horizon:
Texture—silt loam or fine sandy loam

Herrick Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landscape: Uplands
Parent material: Loess
Slope range: 0 to 2 percent
Taxonomic class: Fine, montmorillonitic, mesic Aquic Argiudolls

Typical Pedon

Herrick silt loam, 850 feet east and 2,550 feet south of the northwest corner of sec. 11, T. 3 S., R. 4 W.

Ap—0 to 11 inches; very dark gray (10YR 3/1) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; common fine roots; neutral; abrupt smooth boundary.
E—11 to 18 inches; dark gray (10YR 4/1) silt loam; weak medium subangular blocky structure; friable; few fine roots; few very dark gray (10YR 3/1) organic coatings; slightly acid; clear smooth boundary.
Bt1—18 to 29 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate coarse subangular blocky structure; firm; few very fine roots; few dark gray (10YR 4/1) clay films on faces of peds; few faint very dark gray (10YR 3/1) organic coatings on faces of peds; slightly acid; gradual wavy boundary.
Bt2—29 to 44 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse subangular blocky structure; firm; few very fine roots; few faint dark gray (10YR 4/1) clay films on faces of peds; very few faint very dark gray (10YR 3/1) organic coatings on faces of peds; common soft masses of iron-manganese; slightly acid; gradual wavy boundary.
Bt3—44 to 53 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure; firm; few dark gray (10YR 4/1) clay films on faces of peds; very few very dark gray (10YR 3/1) organic coatings on faces of peds; common soft masses of iron-manganese; slightly acid; gradual wavy boundary.
C—53 to 60 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; massive; friable; common soft masses of iron-manganese; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches

Ap horizon:
Value—2 or 3
Chroma—1 or 2

E horizon:
Value—3 or 4
Chroma—1 or 2

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6

Hickory Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Uplands
Parent material: Thin layer of loess and the underlying glacial till; or entirely glacial till
Slope range: 10 to 60 percent
Taxonomic class: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon

Hickory silt loam, 15 to 30 percent slopes, eroded, 1,850 feet south and 1,900 feet west of the northeast corner of sec. 11, T. 4 S., R. 4 W.

A—0 to 5 inches; dark brown (10YR 3/3) silt loam, light yellowish brown (10YR 6/4) dry; moderate fine granular structure; friable; common fine roots; strongly acid; clear smooth boundary.
Bt1—5 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; moderate very fine subangular blocky structure; friable; few medium and common fine roots; few faint brown (10YR 4/3) clay films on faces of peds; strongly acid; clear smooth boundary.
Bt2—9 to 18 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine subangular blocky structure; friable; common fine roots; many faint brown (10YR 4/3) clay films on faces of peds; about 25 percent sand; few pebbles; few fine manganese concretions; strongly acid; clear smooth boundary.

Bt3—18 to 24 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure parting to moderate fine subangular blocky; friable; few fine roots; common distinct brown (7.5YR 4/3) clay films on faces of peds; about 30 percent sand; few pebbles; few fine manganese and iron concretions; strongly acid; clear smooth boundary.

Bt4—24 to 39 inches; dark yellowish brown (10YR 4/4) clay loam; common fine distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; about 30 percent sand; few pebbles; few fine and medium iron and manganese concretions; strongly acid; clear smooth boundary.

Bt5—39 to 51 inches; yellowish brown (10YR 5/4) loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate coarse subangular blocky structure; firm; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; about 35 percent sand; few pebbles; few fine and medium iron and manganese concretions; moderately acid; clear smooth boundary.

Bt6—51 to 60 inches; yellowish brown (10YR 5/4) clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak coarse subangular blocky structure; firm; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; about 35 percent sand; few pebbles; few fine and medium manganese concretions; neutral.

Range in Characteristics

Thickness of the loess: 0 to 20 inches

Ap or A horizon:
Hue—10YR or 7.5YR
Value—3 or 4
Chroma—3 or 4
Texture—silt loam, loam, or silty clay loam

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam, loam, clay loam, or silty clay loam

Ipava Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landscape: Uplands
Parent material: Loess
Slope range: 0 to 5 percent
Taxonomic class: Fine, montmorillonitic, mesic Aquic Argiudolls

Typical Pedon

Ipava silt loam, 0 to 2 percent slopes, 115 feet east and 120 feet south of the northwest corner of sec. 6, T. 4 S., R. 3 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark gray (10YR 4/1) dry; weak medium granular structure; friable; common fine roots; many faint black (10YR 2/1) organic coatings on faces of peds; neutral; abrupt smooth boundary.

A—8 to 16 inches; very dark brown (10YR 2/2) silt loam, dark gray (10YR 4/1) dry; moderate fine and very fine subangular blocky structure; friable; common fine roots; many faint black (10YR 2/1) organic coatings on faces of peds; neutral; clear smooth boundary.

AB—16 to 20 inches; very dark brown (10YR 2/2) (85 percent) and very dark grayish brown (10YR 3/2) (15 percent) silt loam, dark grayish brown (10YR 4/2) and light grayish brown (10YR 6/2) dry; moderate fine and medium subangular blocky structure; firm; common fine roots; neutral; clear smooth boundary.

Bt1—20 to 28 inches; dark grayish brown (10YR 4/2) silty clay; moderate medium subangular blocky structure; firm; common fine roots; many faint dark gray (10YR 4/1) clay films on faces of peds; common fine manganese concretions; slightly acid; clear smooth boundary.

Bt2—28 to 43 inches; dark yellowish brown (10YR 4/4) silty clay loam; common medium distinct grayish brown (10YR 5/2) and strong brown (7.5YR 4/6) mottles; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common fine roots; common distinct dark gray (10YR 4/1) clay films on faces of peds; many fine iron and manganese concretions; slightly acid; clear smooth boundary.

Btg—43 to 56 inches; light brownish gray (2.5Y 6/2) silty clay loam; many medium prominent strong brown (7.5YR 4/6) mottles; weak moderate and coarse prismatic structure; firm; few fine roots;

common distinct dark gray (10YR 4/1) clay films on faces of peds; many fine and common medium iron and manganese concretions; neutral; gradual smooth boundary.

Cg—56 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; common medium prominent strong brown (7.5YR 4/6) mottles; massive; friable; many fine iron and manganese concretions; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 20 inches

Ap or A horizon:
Value—2 or 3
Chroma—1 or 2

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4

Cg or C horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—2 to 4

Jules Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Coarse-silty, mixed (calcareous), mesic Typic Udifluvents

Typical Pedon

Jules silt loam, frequently flooded, 500 feet east and 1,300 feet south of the northwest corner of sec. 31, T. 3 S., R. 2 W.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam, pale brown (10YR 6/3) dry; weak moderate subangular blocky structure; friable; common fine roots; neutral; abrupt smooth boundary.

A—6 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium platy structure parting to weak fine granular; friable; common fine and medium roots; few faint dark yellowish brown (10YR 3/4) organic coatings and few prominent pale brown silt coatings on faces of peds; slight effervescence; slightly alkaline; clear smooth boundary.

C1—14 to 24 inches; dark yellowish brown (10YR 4/4) silt loam; massive; friable; common fine and medium roots; few faint pale brown (10YR 6/3) silt coatings lining pores; few faint dark yellowish brown (10YR 3/4) organic coatings lining pores and in root channels; slight effervescence; slightly alkaline; clear smooth boundary.

C2—24 to 36 inches; dark yellowish brown (10YR 4/4) silt loam with strata of pale brown (10YR 6/3) silt loam; massive; friable; common faint dark yellowish brown (10YR 3/4) organic coatings lining pores; slight effervescence; slightly alkaline; clear smooth boundary.

C3—36 to 60 inches; dark yellowish brown (10YR 4/4) silt loam with strata of pale brown (10YR 6/3) and dark grayish brown (10YR 4/2) silt loam; massive; friable; few faint dark yellowish brown (10YR 3/4) organic coatings lining pores; few coarse stains on faces of strata; slight effervescence; slightly alkaline.

Range in Characteristics

Depth to carbonates: 0 to 10 inches

A horizon:
Chroma—3 or 4

C horizon:
Value—4 or 5
Chroma—3 or 4

Kendall Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Terraces
Parent material: Loess and outwash
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, mesic Aeric Ochraqualfs

Typical Pedon

Kendall silt loam, 0 to 2 percent slopes, 920 feet south and 340 feet west of the center of sec. 8, T. 2 S., R. 4 W., in Brown County, Illinois:

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; weak fine granular structure; friable; common fine roots; few fine dark concretions of iron and manganese oxides; neutral; abrupt smooth boundary.

E—10 to 16 inches; grayish brown (10YR 5/2) silt loam; few fine prominent yellowish brown (10YR

5/6) and few fine faint dark grayish brown (10YR 4/2) mottles; moderate medium platy structure; friable; few fine roots; few fine manganese concretions; strongly acid; clear smooth boundary.

Bt1—16 to 26 inches; yellowish brown (10YR 5/4) silty clay loam; common fine distinct grayish brown (10YR 5/2) mottles; moderate medium angular blocky structure; firm; few fine roots; common distinct white (10YR 8/1 dry) silt coatings and many distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium manganese concretions; very strongly acid; clear smooth boundary.

Bt2—26 to 36 inches; grayish brown (10YR 5/2) silty clay; common fine distinct yellowish brown (10YR 5/6) mottles; moderate coarse angular blocky structure; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films and few distinct white (10YR 8/1 dry) silt coatings on faces of peds; common fine and medium manganese concretions; strongly acid; clear smooth boundary.

Bt3—36 to 50 inches; grayish brown (10YR 5/2) silty clay loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate coarse angular blocky structure; firm; few fine roots; many distinct grayish brown (10YR 5/2) clay films and few distinct white (10YR 8/1 dry) silt coatings on faces of peds; common fine and medium manganese concretions; moderately acid; gradual wavy boundary.

2Bt4—50 to 60 inches; yellowish brown (10YR 5/6) silt loam; many medium prominent light brownish gray (2.5Y 6/2) mottles; weak coarse angular blocky structure; firm; few distinct gray (10YR 5/1) clay films on faces of peds; few medium manganese concretions; slightly acid.

Range in Characteristics

A horizon:
Value—4 or 5
Chroma—2 or 3

E horizon:
Value—4 to 7
Chroma—2 or 3

Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 6

Keomah Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow
Landscape: Uplands
Parent material: Loess
Slope range: 0 to 5 percent
Taxonomic class: Fine, montmorillonitic, mesic Aeric Ochraqualfs

Typical Pedon

Keomah silt loam, 0 to 2 percent slopes, 825 feet west and 2,145 feet north of the southeast corner of sec. 14, T. 3 S., R. 4 W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; moderate thin platy structure; friable; many very fine roots; neutral; abrupt smooth boundary.

E—8 to 10 inches; grayish brown (10YR 5/2) silt loam; few fine faint dark grayish brown (10YR 4/2) mottles; moderate medium subangular blocky structure; friable; common very fine roots; few fine manganese concretions; slightly acid; abrupt smooth boundary.

Bt1—10 to 13 inches; brown (10YR 5/3) silty clay loam; few medium distinct yellowish brown (10YR 5/6) and few fine faint dark grayish brown (10YR 4/2) mottles; moderate medium angular blocky structure; firm; common very fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine manganese concretions; strongly acid; clear smooth boundary.

Bt2—13 to 21 inches; grayish brown (10YR 5/2) silty clay; common fine distinct yellowish brown (10YR 5/6) and common fine faint dark grayish brown (10YR 4/2) mottles; moderate medium prismatic structure; firm; common very fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine manganese concretions and very few iron stains; very strongly acid; clear smooth boundary.

Btg1—21 to 31 inches; grayish brown (2.5Y 5/2) silty clay; common fine and medium prominent yellowish brown (10YR 5/6) mottles; moderate medium and coarse prismatic structure; firm; common very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine manganese concretions; very few iron stains; very strongly acid; gradual smooth boundary.

Btg2—31 to 46 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine and medium prominent yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; firm; few very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine manganese concretions; very few iron stains; strongly acid; gradual smooth boundary.

Cg—46 to 60 inches; grayish brown (2.5Y 5/2) silt loam; common fine and medium prominent yellowish brown (10YR 5/6) mottles; massive; friable; few very fine roots; few fine manganese concretions; very few iron stains; moderately acid.

Range in Characteristics

A horizon:
Value—4 or 5
Chroma—2 or 3

E horizon:
Value—4 or 5
Chroma—2 or 3

Bt or Btg horizon:
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam, silty clay, or silt loam

Cg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4

Lacrescent Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part and moderately rapid in the lower part
Landscape: Uplands
Parent material: Colluvium
Slope range: 30 to 70 percent
Taxonomic class: Loamy-skeletal, mixed, mesic Typic Hapludolls

Typical Pedon

Lacrescent channery silt loam, 30 to 70 percent slopes, 2,600 feet east and 1,550 feet south of the northwest corner of sec. 31, T. 4 S., R. 6 W.

A1—0 to 7 inches; very dark gray (10YR 3/1) channery silt loam, gray (10YR 5/1) dry; moderate medium granular structure; friable; many fine and few coarse roots; about 30 percent channers and 5 percent flagstones; strong effervescence; clear wavy boundary.

A2—7 to 21 inches; very dark gray (10YR 3/1) gravelly silt loam, gray (10YR 5/1) dry; moderate medium subangular blocky structure parting to moderate medium granular; friable; common medium and few coarse roots; about 30 percent coarse fragments; slightly alkaline; strong effervescence; gradual wavy boundary.

Bw—21 to 38 inches; dark brown (10YR 3/3) very gravelly silt loam; moderate medium subangular blocky structure; friable; common medium and few coarse roots; many distinct dark brown (10YR 3/3) organic coatings on faces of peds: about 40 percent coarse fragments; moderately alkaline; violent effervescence; gradual wavy boundary.

C—38 to 60 inches; dark yellowish brown (10YR 4/4) very flaggy silt loam; massive; friable; common fine roots; common distinct dark brown (10YR 3/3) organic films lining pores and in root channels; about 30 percent flagstones and 25 percent channers; moderately alkaline; violent effervescence.

Range in Characteristics

A horizon:
Value—2 or 3
Chroma—1 to 3

Bw horizon:
Chroma—3 or 4

C horizon:
Value—4 or 5
Chroma—3 or 4

Lawson Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, mesic Cumulic Hapludolls

Typical Pedon

Lawson silt loam, occasionally flooded, 2,790 feet west and 1,150 feet south of the northeast corner of sec. 15, T. 4 S., R. 7 W.

Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, gray (10YR 5/1) dry; weak medium

granular structure; very friable; neutral; clear smooth boundary.

A1—8 to 20 inches; very dark brown (10YR 2/2) silt loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure parting to weak medium granular; friable; neutral; clear smooth boundary.

A2—20 to 32 inches; very dark grayish brown (10YR 3/2) silt loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure parting to weak medium granular; friable; neutral; clear smooth boundary.

C1—32 to 47 inches; dark grayish brown (10YR 4/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/6) mottles; massive; firm; many faint very dark gray (10YR 3/1) organic coatings lining pores; neutral; clear smooth boundary.

C2—47 to 60 inches; dark grayish brown (10YR 4/2) silty clay loam; many medium distinct dark yellowish brown (10YR 4/6) mottles; massive; firm; common faint very dark gray (10YR 3/1) and dark gray (10YR 4/1) coatings lining pores; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 36 inches

A horizon:
Value—2 or 3
Chroma—1 or 2

C horizon:
Value—4 or 5
Chroma—1 to 3
Texture—silty clay loam or silt loam

Orion Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Coarse-silty, mixed, nonacid, mesic Aquic Udifluvents

Typical Pedon

Orion silt loam, frequently flooded, 2,010 feet west and 780 feet north of the southeast corner of sec. 14, T. 3 S., R. 4 W.

Ap—0 to 6 inches; variegated dark grayish brown (10YR 4/2) and dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine roots; few iron stains; slightly acid; abrupt smooth boundary.

C1—6 to 13 inches; dark grayish brown (10YR 4/2) silt loam; massive; friable; common fine roots; common iron stains; slightly acid; clear smooth boundary.

C2—13 to 22 inches; variegated dark grayish brown (10YR 4/2) and very dark grayish brown (10YR 3/2) silt loam; massive; friable; common fine roots; common iron stains; slightly acid; clear smooth boundary.

Ab1—22 to 30 inches; black (10YR 2/1) silt loam; weak medium subangular blocky structure; friable; few fine roots; moderately acid; clear smooth boundary.

Ab2—30 to 49 inches; black (10YR 2/1) silt loam; weak coarse subangular blocky structure; friable; very few fine roots; moderately acid; clear smooth boundary.

Ab3—49 to 60 inches; very dark gray (10YR 3/1) silt loam; few medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; very few fine roots; slightly acid.

Range in Characteristics

Depth to the buried soil: 20 to 40 inches

Ap horizon:
Value—3 to 5
Chroma—2 or 3

C horizon:
Value—3 to 5
Chroma—2 or 3

Ab horizon:
Value—2 or 3
Chroma—1 or 2

Petrolia Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, nonacid, mesic Typic Fluvaquents

Typical Pedon

Petrolia silt loam, occasionally flooded, 2,100 feet south and 2,400 feet east of the northwest corner of sec. 19, T. 6 S., R. 5 W.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak coarse subangular blocky structure; firm; common very fine roots; neutral; abrupt smooth boundary.
Cg1—11 to 18 inches; dark gray (10YR 4/1) silty clay loam; common fine and medium prominent strong brown (7.5YR 4/6) and common medium distinct grayish brown (10YR 5/2) mottles; weak medium prismatic structure; firm; common very fine and fine roots; slightly acid; gradual smooth boundary.
Cg2—18 to 34 inches; dark gray (10YR 4/1) silty clay loam; common medium prominent strong brown (7.5YR 4/6) mottles; weak medium prismatic structure; firm; common very fine and fine roots; moderately acid; gradual smooth boundary.
Cg3—34 to 53 inches; gray (10YR 5/1) silt loam; common medium prominent strong brown (7.5YR 4/6) and faint grayish brown (10YR 5/2) mottles; massive; friable; few very fine roots; moderately acid; gradual smooth boundary.
Cg4—53 to 60 inches; dark gray (2.5Y 4/0) silt loam; common fine distinct grayish brown (2.5Y 5/2) mottles; massive; friable; slightly acid.

Range in Characteristics

A horizon:
Value—4 or 5
Chroma—1 or 2

Cg horizon:
Hue—10YR, 2.5Y, 5Y, or neutral
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam or silt loam

Raddle Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Terraces
Parent material: Local alluvium
Slope range: 1 to 5 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Hapludolls

Typical Pedon

Raddle silt loam, 1 to 5 percent slopes, 1,860 feet west and 1,340 feet south of the northeast corner of sec. 17, T. 4 S., R. 2 W.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.
A—6 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; few fine roots; slightly acid; abrupt smooth boundary.
AB—9 to 17 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; friable; very few fine roots; neutral; clear smooth boundary.
Bw1—17 to 26 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; very few fine roots; common faint dark brown (10YR 3/3) organic coatings lining pores; neutral; clear smooth boundary.
Bw2—26 to 43 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; few faint dark brown (10YR 3/3) organic coatings lining pores; neutral; clear smooth boundary.
BC—43 to 60 inches; brown (10YR 4/3) silt loam; weak coarse subangular blocky structure; friable; common faint pale brown (10YR 6/3) silt coatings lining pores; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 24 inches

Ap or A horizon:
Value—2 or 3
Chroma—1 to 3

Bw horizon:
Value—3 to 5
Chroma—3 or 4

Riley Series

Depth class: Moderately deep to sand
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and rapid in the lower part
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Fluvaquentic Hapludolls

Typical Pedon

Riley silty clay loam, occasionally flooded, 1,595 feet east and 490 feet south of the northwest corner of sec. 2, T. 3 S., R. 9 W., in Adams County, Illinois:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry;

moderate fine granular and moderate fine subangular blocky structure; firm; slightly acid; abrupt smooth boundary.
A—7 to 13 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine and medium subangular blocky structure; firm; slightly acid; abrupt smooth boundary.
BA—13 to 19 inches; dark grayish brown (10YR 4/2) silty clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; firm; moderately acid; clear smooth boundary.
Bw1—19 to 27 inches; grayish brown (10YR 5/2) loam; common fine distinct dark yellowish brown (10YR 4/4) mottles; moderate coarse subangular blocky structure; firm; many fine concretions of iron and manganese oxides; moderately acid; clear smooth boundary.
2Bw2—27 to 36 inches; dark brown (10YR 4/3) loamy sand; few fine faint dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; friable; slightly acid; gradual smooth boundary.
2C—36 to 76 inches; brown (10YR 5/3) sand; single grained; loose; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches

Ap and A horizons:
Value—2 or 3
Chroma—2 or 3

Bw horizon:
Value—4 to 6
Chroma—2 or 3
Texture—silty clay loam, clay loam, loam, or silt loam

C horizon:
Value—4 to 6
Chroma—1 to 4
Texture—sand, fine sand, or loamy fine sand

Rozetta Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Uplands and high terraces
Parent material: Loess
Slope range: 2 to 10 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Rozetta silt loam, 2 to 5 percent slopes, 3,300 feet west and 330 feet north of the southeast corner of sec. 15, T. 5 S., R. 4 W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine and medium subangular blocky structure; friable; common fine roots; neutral; clear smooth boundary.
BE—8 to 13 inches; brown (10YR 4/3) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; neutral; clear smooth boundary.
Bt1—13 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; few faint brown (10YR 4/3) clay films on faces of peds; common distinct light gray (10YR 7/2) silt coatings on faces of peds; moderately acid; gradual smooth boundary.
Bt2—21 to 33 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine faint brown (10YR 5/3) mottles; weak medium prismatic structure; firm; few very fine roots; few faint brown (10YR 4/3) clay films on faces of peds; very few fine manganese stains; strongly acid; gradual smooth boundary.
Bt3—33 to 44 inches; yellowish brown (10YR 5/4) silt loam; common medium faint brown (10YR 5/3) mottles; weak coarse subangular blocky structure; friable; few very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine manganese concretions; strongly acid; gradual smooth boundary.
Bt4—44 to 55 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light brownish gray (2.5Y 6/2) mottles; weak coarse subangular blocky structure; friable; very few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine manganese concretions; moderately acid; gradual smooth boundary.
C—55 to 60 inches; yellowish brown (10YR 5/4) silt loam; few medium distinct light brownish gray (2.5Y 6/2) mottles; massive; friable; few fine manganese concretions; moderately acid.

Range in Characteristics

Ap horizon:
Value—3 to 5
Chroma—1 to 3
Texture—silt loam or silty clay loam

Bt horizon:
Value—4 or 5
Chroma—3 to 6

C horizon:
Value—4 or 5
Chroma—3 to 6

Sarpy Series

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Mixed, mesic Typic Udipsamments

Typical Pedon

Sarpy loamy sand, frequently flooded, 600 feet east and 2,700 feet south of the center of sec. 15, T. 7 S., R. 2 W.

Ap—0 to 10 inches; dark yellowish brown (10YR 4/4) loamy sand, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure; very friable; many fine roots; about 5 percent pebbles; slightly acid; abrupt smooth boundary.
C—10 to 60 inches; yellowish brown (10YR 5/4) sand with strata of loamy sand; single grained; loose; about 5 percent pebbles; neutral.

Range in Characteristics

Ap horizon:
Value—3 to 5
Chroma—3 or 4
Texture—loamy sand or loamy fine sand

C horizon:
Value—4 to 6
Chroma—2 to 4
Texture—stratified sand, loamy sand, or loamy fine sand

Seaton Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Uplands
Parent material: Loess
Slope range: 2 to 50 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Seaton silt loam, 30 to 50 percent slopes, 1,180 feet south and 180 feet west of the northeast corner of sec. 23, T. 5 S., R. 6 W.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; few fine roots; neutral; clear smooth boundary.
E—6 to 9 inches; brown (10YR 4/3) silt loam; very weak thin platy structure; friable; few fine roots; slightly acid; clear smooth boundary.
BE—9 to 16 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.
Bt1—16 to 29 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint brown (10YR 4/3) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coatings on faces of peds; very strongly acid; clear smooth boundary.
Bt2—29 to 36 inches; dark yellowish brown (10YR 4/4) silt loam; moderate coarse subangular blocky structure; friable; few fine roots; few faint brown (10YR 4/3) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coatings on faces of peds; very strongly acid; gradual smooth boundary.
Bt3—36 to 47 inches; dark yellowish brown (10YR 4/4) silt loam; moderate coarse subangular blocky structure parting to moderate medium subangular blocky; friable; few fine roots; few faint brown (7.5YR 4/4) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coatings on faces of peds; strongly acid; gradual smooth boundary.
BC—47 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; weak coarse subangular blocky structure; friable; few fine roots; strongly acid.

Range in Characteristics

A or Ap horizon:
Value—3 to 5
Chroma—2 to 4

E horizon:
Value—4 or 5
Chroma—3 or 4

Bt horizon:
Value—4 or 5
Chroma—3 to 6

Shaffton Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, mesic Fluvaquentic Hapludolls

Typical Pedon

Shaffton silty clay loam, occasionally flooded, 2,640 feet south and 660 feet east of the northwest corner of sec. 31, T. 5 S., R. 6 W.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; firm; few fine roots; neutral; abrupt smooth boundary.

BA—11 to 16 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; many faint dark grayish brown (10YR 4/2) organic coatings on faces of peds; moderately acid; clear smooth boundary.

Bw1—16 to 28 inches; pale brown (10YR 6/3) silty clay loam; common fine faint light brownish gray (10YR 6/2) and few fine distinct yellowish brown (10YR 5/6) mottles; firm; common very fine roots; few fine concretions of iron and manganese oxides; moderately acid; gradual smooth boundary.

Bw2—28 to 36 inches; light brownish gray (10YR 6/2) loam; common fine faint pale brown (10YR 6/3) and few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine concretions of iron and manganese oxides; moderately acid; gradual smooth boundary.

BC—36 to 46 inches; light brownish gray (10YR 6/2) fine sandy loam; many medium faint pale brown (10YR 6/3) mottles; weak medium granular structure; very friable; few fine concretions of iron and manganese oxides; moderately acid; gradual smooth boundary.

C—46 to 60 inches; pale brown (10YR 6/3) loamy fine sand with strata of loam; single grained; loose; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches

Ap or A horizon:
Value—2 or 3
Chroma—2 or 3

Bw horizon:
Value—4 to 6
Chroma—2 or 3

C horizon:
Value—4 to 6
Chroma—1 to 4
Texture—stratified loamy fine sand, loam, fine sand, and sand

Sparta Series

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Landscape: Flood plains
Parent material: Sandy sediments
Slope range: 0 to 2 percent
Taxonomic class: Sandy, mixed, mesic Entic Hapludolls

Typical Pedon

Sparta loamy fine sand, rarely flooded, 1,250 feet south and 200 feet east of the northwest corner of sec. 1, T. 4 S., R. 8 W.

Ap—0 to 9 inches; very dark gray (10YR 3/1) loamy fine sand, grayish brown (10YR 5/2) dry; weak fine granular structure; very friable; few fine roots; neutral; clear smooth boundary.

A—9 to 12 inches; very dark grayish brown (10YR 3/2) loamy fine sand, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; very friable; few fine roots; moderately acid; clear smooth boundary.

AB—12 to 17 inches; brown (10YR 4/3) loamy sand; weak fine subangular blocky structure; very friable; few fine roots; strongly acid; clear smooth boundary.

Bw1—17 to 22 inches; dark yellowish brown (10YR 4/4) loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots; strongly acid; gradual smooth boundary.

Bw2—22 to 49 inches; strong brown (7.5YR 4/6) loamy fine sand; few medium faint yellowish brown (10YR 5/6) mottles; weak medium prismatic structure; very friable; few fine roots; strongly acid; gradual smooth boundary.

C—49 to 60 inches; dark yellowish brown (10YR 4/6) fine sand; few medium faint yellowish brown

(10YR 5/6) mottles; single grained; loose; strongly acid.

Range in Characteristics

Thickness of the mollic epipedon: 11 to 20 inches

Ap or A horizon:
Value—2 or 3
Chroma—1 or 2

Bw horizon:
Hue—10YR or 7.5YR
Value—3 to 6
Chroma—3 to 6
Texture—fine sand or loamy fine sand

C horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—fine sand or sand

Stronghurst Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Uplands
Parent material: Loess
Slope range: 0 to 5 percent
Taxonomic class: Fine-silty, mixed, mesic Aeric Ochraqualfs

Typical Pedon

Stronghurst silt loam, 0 to 2 percent slopes, 320 feet east and 160 feet north of the southwest corner of sec. 36, T. 7 S., R. 3 W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak medium granular structure; friable; few fine roots; strongly acid; abrupt smooth boundary.
E—9 to 16 inches; pale brown (10YR 6/3) silt loam; few fine faint grayish brown (10YR 5/2) mottles; weak very thin platy structure; friable; few fine roots; few medium iron and manganese stains; very strongly acid; clear smooth boundary.
Bt1—16 to 22 inches; brown (10YR 5/3) silty clay loam; few fine distinct strong brown (7.5YR 5/6) and common fine faint light grayish brown (10YR 6/2) mottles; weak medium subangular blocky structure; firm; very few fine roots; few faint brown (10YR 4/3) and dark grayish brown (10YR 4/2) clay films on faces of peds; few fine and medium iron and manganese stains; very strongly acid; clear smooth boundary.
Bt2—22 to 36 inches; brown (10YR 5/3) silty clay loam; common medium distinct light grayish brown (10YR 6/2) and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; very few fine roots; few faint brown (10YR 4/3) and dark grayish brown (10YR 4/2) clay films on faces of peds; few medium manganese stains; very strongly acid; clear smooth boundary.
Btg—36 to 43 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint light brownish gray (10YR 6/2) and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; very few fine roots; few faint brown (10YR 4/3) clay films on faces of peds; few medium manganese stains; strongly acid; gradual smooth boundary.
BCg—43 to 50 inches; mottled light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) silt loam; weak coarse subangular blocky structure; friable; few medium manganese stains; moderately acid; gradual smooth boundary.
Cg—50 to 60 inches; mottled light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) silt loam; massive; friable; few medium manganese stains; slightly acid.

Range in Characteristics

Ap horizon:
Value—4 or 5
Chroma—1 or 2

E horizon:
Value—5 or 6
Chroma—2 or 3

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4

Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6

Sylvan Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Uplands

Parent material: Loess
Slope range: 2 to 15 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon

Sylvan silt loam, 5 to 10 percent slopes, eroded, 1,600 feet west and 2,680 feet north of the southeast corner of sec. 23, T. 5 S., R. 4 W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam mixed with dark yellowish brown (10YR 4/4) subsoil material, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; few fine roots; neutral; abrupt smooth boundary.
Bt1—9 to 16 inches; dark yellowish brown (10YR 4/6) silt loam; weak medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; slightly acid; clear smooth boundary.
Bt2—16 to 21 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; neutral; clear smooth boundary.
Bt3—21 to 27 inches; brown (10YR 5/3) silt loam; many coarse faint grayish brown (10YR 5/2) mottles; moderate medium prismatic structure parting to weak medium subangular blocky; firm; few fine roots; few faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine strong brown (7.5YR 4/6), soft accumulations of iron oxide; neutral; clear smooth boundary.
BC—27 to 35 inches; grayish brown (10YR 5/2) silt loam; common fine prominent strong brown (7.5YR 4/6 and 5/6) mottles; moderate medium prismatic structure parting to weak medium subangular blocky; friable; few fine roots; slight effervescence; moderately alkaline; gradual smooth boundary.
C—35 to 60 inches; grayish brown (10YR 5/2) silt loam; common fine and medium prominent strong brown (7.5YR 4/6 and 5/6) mottles; massive; friable; slight effervescence; moderately alkaline.

Range in Characteristics

Depth to carbonates: 22 to 40 inches

Ap horizon:
Value—4 or 5
Chroma—2 to 4
Texture—silt loam or silty clay loam

Bt horizon:
Value—4 or 5
Chroma—3 to 6
Texture—silt loam or silty clay loam

C horizon:
Hue—2.5Y or 10YR
Value—5 or 6
Chroma—2 to 4
Texture—silt or silt loam

Tama Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Uplands and high terraces
Parent material: Loess
Slope range: 1 to 5 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Argiudolls

Typical Pedon

Tama silt loam, 1 to 5 percent slopes, 150 feet south and 450 feet east of the northwest corner of sec. 2, T. 4 S., R. 7 W.

Ap—0 to 9 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; common fine roots; neutral; abrupt smooth boundary.
A—9 to 16 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; common fine roots; neutral; clear smooth boundary.
AB—16 to 21 inches; very dark brown (10YR 2/2) silt loam (80 percent), dark grayish brown (10YR 4/2) dry; mixed with about 20 percent dark yellowish brown (10YR 4/4) silt loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to weak very fine subangular blocky; friable; few fine roots; slightly acid; clear smooth boundary.
Bt1—21 to 33 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint dark brown (10YR 3/3) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings lining pores; moderately acid; clear smooth boundary.
Bt2—33 to 41 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint dark brown (10YR 3/3) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings lining pores; moderately acid; gradual smooth boundary.

Bt3—41 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint dark brown (10YR 3/3) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings lining pores; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches

A or Ap horizon:
Value—2 or 3
Chroma—1 or 2

Bt horizon:
Value—4 or 5
Chroma—3 or 4

Tice Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, mesic Fluvaquentic Hapludolls

Typical Pedon

Tice silt loam, occasionally flooded, 2,050 feet west and 2,600 feet north of the southeast corner of sec. 15, T. 6 S., R. 6 W.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; firm; many medium and common fine roots; moderately acid; abrupt smooth boundary.
Bw1—10 to 19 inches; dark brown (10YR 4/3) silt loam; common fine faint dark grayish brown (10YR 4/2) mottles; weak coarse subangular blocky structure; firm; few very fine roots; few soft masses of iron-manganese; strongly acid; gradual smooth boundary.
Bw2—19 to 29 inches; dark brown (10YR 4/3) silt loam; common fine faint dark grayish brown (10YR 4/2) mottles; weak medium prismatic structure; firm; few very fine roots; few soft masses of iron-manganese; strongly acid; gradual smooth boundary.
Bw3—29 to 46 inches; dark brown (10YR 4/3) silty clay loam; common fine faint dark grayish brown (10YR 4/2) mottles; weak coarse prismatic structure; firm; few faint dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) coatings on faces of peds; common soft masses of iron-manganese; moderately acid; gradual smooth boundary.
Bw4—46 to 57 inches; dark brown (10YR 4/3) silty clay loam; common fine faint dark grayish brown (10YR 4/2) and dark yellowish brown (10YR 4/4) mottles; weak coarse prismatic structure; firm; few faint grayish brown (10YR 5/2) coatings on faces of peds; few soft masses of iron-manganese; moderately acid; gradual smooth boundary.
Bw5—57 to 60 inches; grayish brown (10YR 5/2) silt loam; common medium faint dark brown (10YR 4/3) and distinct dark yellowish brown (10YR 4/4) mottles; weak coarse prismatic structure; friable; few faint dark grayish brown (10YR 4/2) coatings on faces of peds; few soft masses of iron-manganese; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches

Ap horizon:
Value—2 or 3
Chroma—1 or 2

Bw horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4

Timula Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Uplands
Parent material: Loess
Slope range: 5 to 30 percent
Taxonomic class: Coarse-silty, mixed, mesic Typic Eutrochrepts

Typical Pedon

Timula silt loam, 15 to 30 percent slopes, eroded, 2,300 feet south and 1,800 feet east of the northwest corner of sec. 6, T. 4 S., R. 2 W.

A—0 to 8 inches; dark yellowish brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine and very fine roots; neutral; clear smooth boundary.
Bw1—8 to 15 inches; dark yellowish brown (10YR

4/6) silt loam; weak medium subangular blocky structure; friable; many fine and very fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and lining pores; few distinct dark grayish brown (10YR 4/2) organic coatings lining pores; neutral; clear smooth boundary.

Bw2—15 to 23 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; common fine and very fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and lining pores; few distinct dark grayish brown (10YR 4/2) organic coatings lining pores; slight effervescence; neutral; clear wavy boundary.

C—23 to 60 inches; yellowish brown (10YR 5/4) silt; massive; friable; few fine and very fine roots; common fine and very fine, soft accumulations of calcium carbonate; strong effervescence; slightly alkaline.

Range in Characteristics

Depth to carbonates: 7 to 30 inches

A or Ap horizon:
Value—3 or 4
Chroma—2 or 3

Bw horizon:
Value—4 to 6
Chroma—4 to 6

C horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—2 to 4
Texture—silt or silt loam

Titus Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine, montmorillonitic, mesic Fluvaquentic Haplaquolls

Typical Pedon

Titus silty clay, occasionally flooded, 1,580 feet west and 280 feet south of the northeast corner of sec. 12, T. 4 S., R. 8 W.

Ap—0 to 10 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; firm; few fine roots; neutral; abrupt smooth boundary.

A—10 to 15 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; firm; few fine roots; neutral; clear smooth boundary.

Bg1—15 to 32 inches; dark gray (10YR 4/1) silty clay loam; weak fine prismatic structure parting to weak fine subangular blocky; firm; few fine roots; few faint very dark gray (10YR 3/1) organic coatings on faces of peds; common fine manganese concretions; neutral; clear smooth boundary.

Bg2—32 to 46 inches; dark gray (10YR 4/1) silty clay loam; common fine distinct dark yellowish brown (10YR 3/4) mottles; strong medium prismatic structure parting to strong medium subangular blocky; firm; few faint very dark gray (10YR 3/1) organic coatings on faces of peds; common fine manganese concretions; few slickensides; neutral; clear smooth boundary.

Bg3—46 to 60 inches; very dark gray (10YR 3/1) silty clay; few fine faint very dark grayish brown (2.5Y 3/2) mottles; strong medium prismatic structure parting to strong medium and coarse subangular blocky; firm; common faint black (10YR 2/1) organic coatings on faces of peds; common fine manganese concretions; many continuous slickensides; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches

A horizon:
Value—2 or 3
Texture—silty clay or silty clay loam

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or neutral
Value—4 or 5
Chroma—0 or 1
Texture—silty clay loam or silty clay

Twomile Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Landscape: Low terraces
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, mesic Typic Albaqualfs

Typical Pedon

Twomile silt loam, occasionally flooded, 120 feet east and 1,560 feet north of the southwest corner of sec. 14, T. 4 S., R. 6 W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, gray (10YR 5/1) dry; weak medium granular structure; friable; common fine roots; slightly alkaline; clear smooth boundary.

Eg1—6 to 10 inches; dark grayish brown (10YR 4/2) silt loam; weak medium and thick platy structure; friable; common fine roots; neutral; abrupt smooth boundary.

Eg2—10 to 16 inches; mottled dark grayish brown (10YR 4/2) (70 percent) and light brownish gray (10YR 6/2) (30 percent) silt loam; few fine prominent dark brown (7.5YR 3/4) mottles; weak fine subangular blocky structure; friable; common fine roots; many fine iron concretions; neutral; clear smooth boundary.

Eg3—16 to 24 inches; light brownish gray (10YR 6/2) silt; many medium faint dark grayish brown (10YR 4/2) and common fine prominent dark brown (7.5YR 4/4) mottles; weak fine and medium subangular blocky structure; friable; common fine roots; many fine and medium iron concretions; neutral; gradual smooth boundary.

Btg1—24 to 32 inches; grayish brown (10YR 5/2) silt loam; many medium prominent dark brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds and lining pores; common medium and fine iron concretions; moderately acid; gradual smooth boundary.

Btg2—32 to 44 inches; grayish brown (10YR 5/2) silt loam; many medium prominent dark brown (7.5YR 4/4) and common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films lining pores and on faces of peds; common medium and fine iron concretions; moderately acid; gradual smooth boundary.

BCg—44 to 60 inches; grayish brown (10YR 5/2) silt loam; many medium prominent strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct light gray (10YR 7/1) silt coatings on faces of peds; slightly acid.

Range in Characteristics

Ap horizon:
Value—4 or 5

Eg horizon:
Hue—10YR or 2.5Y
Chroma—1 or 2

Btg horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—1 or 2
Texture—silt loam or silty clay loam

Ursa Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landscape: Uplands
Parent material: Thin layer of loess and the underlying glacial till; or entirely glacial till
Slope range: 10 to 20 percent
Taxonomic class: Fine, montmorillonitic, mesic Typic Hapludalfs

Typical Pedon

Ursa silt loam, 10 to 15 percent slopes, eroded, in a field of tall fescue, 540 feet south and 700 feet east of the northwest corner of sec. 16, T. 4 S., R. 4 W.

Ap1—0 to 4 inches; dark brown (10YR 4/3) silt loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; friable; common fine roots; neutral; clear smooth boundary.

Ap2—4 to 7 inches; dark yellowish brown (10YR 4/4) silt loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; friable; common fine roots; many medium faint dark brown (10YR 4/3) organic coatings; neutral; clear smooth boundary.

BE—7 to 11 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; slightly acid; clear smooth boundary.

Bt1—11 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few faint brown (10YR 5/3) clay films on faces of peds; few pebbles; strongly acid; clear smooth boundary.

2Bt2—17 to 27 inches; yellowish brown (10YR 5/6) silty clay; common medium distinct strong brown (7.5YR 4/6) mottles; very weak medium subangular blocky structure; very firm; very few fine roots; common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; few pebbles; few manganese stains; moderately acid; gradual smooth boundary.

2Bt3—27 to 43 inches; yellowish brown (10YR 5/6) silty clay; common medium prominent light brownish gray (2.5Y 6/2) mottles; very weak medium angular and subangular blocky structure; very firm; very few fine roots; common prominent pinkish gray (7.5YR 6/2) clay films on faces of peds; few pebbles; few manganese stains; slightly acid; gradual smooth boundary.

2BC—43 to 60 inches; yellowish brown (10YR 5/6) silty clay; common medium prominent light brownish gray (2.5Y 6/2) mottles; very weak coarse angular and subangular blocky structure; very firm; very few fine roots; few pebbles; few manganese stains; slightly acid.

Range in Characteristics

Thickness of the loess: Less than 20 inches

Ap horizon:
Chroma—2 to 4
Texture—silt loam or silty clay loam

Bt or 2Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture—clay loam, silty clay loam, silty clay, or clay

Vesser Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, mesic Argiaquic Argialbolls

Typical Pedon

Vesser silt loam, occasionally flooded, 2,550 feet west and 250 feet north of the southeast corner of sec. 1, T. 4 S., R. 8 W.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; very friable; few fine roots; slightly acid; clear smooth boundary.

Eg1—10 to 16 inches; gray (10YR 5/1) silt loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; moderate medium platy structure; very friable; many faint light gray (10YR 6/1) silt coatings on faces of peds; common manganese concretions; slightly acid; clear smooth boundary.

Eg2—16 to 22 inches; gray (10YR 5/1) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; moderate medium platy structure; very friable; many faint light gray (10YR 7/1) silt coatings on faces of peds; strongly acid; clear smooth boundary.

Btg—22 to 37 inches; grayish brown (10YR 5/2) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak medium prismatic structure; friable; few faint gray (10YR 5/1) clay films on faces of peds; common manganese concretions; strongly acid; gradual smooth boundary.

Cg1—37 to 53 inches; gray (10YR 5/1) silt loam; common medium distinct brown (10YR 4/3) mottles; massive; very friable; common medium distinct white (10YR 8/1) silt coatings lining pores; common manganese concretions; moderately acid; gradual smooth boundary.

Cg2—53 to 60 inches; gray (10YR 5/1), stratified silt loam and silt; few medium faint dark grayish brown (10YR 4/2) mottles; massive; very friable; many distinct white (10YR 8/1) silt coatings lining pores; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches

Ap horizon:
Value—2 or 3
Chroma—1 or 2

Eg horizon:
Value—4 or 5
Chroma—1 or 2

Btg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 or 2
Texture—silt loam or silty clay loam

Cg horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 or 2
Texture—stratified silt loam and silt

Virden Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Landscape: Uplands
Parent material: Loess
Slope range: 0 to 2 percent

Taxonomic class: Fine, montmorillonitic, mesic Typic Argiaquolls

Typical Pedon

Virden silt loam, 1,860 feet west and 440 feet south of the northeast corner of sec. 25, T. 4 S., R. 4 W.

Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, gray (10YR 5/1) dry; weak very fine granular structure; friable; few fine roots; moderately acid; abrupt smooth boundary.

A—8 to 14 inches; very dark brown (10YR 2/2) silt loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; very friable; few fine roots; slightly acid; clear smooth boundary.

Btg1—14 to 20 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) dry; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure parting to moderate very fine subangular blocky; firm; few fine roots; many faint very dark brown (10YR 2/2) clay films on faces of peds; few fine manganese concretions; neutral; clear smooth boundary.

Btg2—20 to 36 inches; gray (10YR 5/1) silty clay loam; common medium prominent yellowish brown (10YR 5/6) and few fine prominent dark yellowish brown (10YR 4/6) mottles; weak medium prismatic structure; firm; few fine roots; common faint very dark grayish brown (10YR 3/2) clay films on faces of peds and lining root channels; few medium distinct manganese and iron concretions; neutral; clear smooth boundary.

BCg—36 to 43 inches; gray (10YR 5/1) silt loam; many medium prominent yellowish brown (10YR 5/8) mottles; weak medium prismatic structure; friable; few faint very dark grayish brown (10YR 3/2) clay films on faces of peds and lining root channels; common fine manganese concretions; neutral; gradual smooth boundary.

Cg—43 to 60 inches; light gray (5Y 6/1) silt loam; common medium prominent yellowish brown (10YR 5/8) mottles; massive; friable; few prominent very dark grayish brown (10YR 3/2) organic coatings in root channels; slight effervescence; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 24 inches

Ap or A horizon:
Value—2 or 3
Chroma—1 or 2

Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5
Chroma—1 or 2

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2

Wakeland Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Flood plains
Parent material: Alluvium
Slope range: 0 to 2 percent
Taxonomic class: Coarse-silty, mixed, nonacid, mesic Aeric Fluvaquents

Typical Pedon

Wakeland silt loam, frequently flooded, 300 feet west and 1,800 feet south of the northeast corner of sec. 35, T. 5 S., R. 5 W.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, brown (10YR 5/3) dry; weak medium granular structure; very friable; slightly acid; abrupt smooth boundary.

C—7 to 33 inches; variegated brown (10YR 5/3) and grayish brown (10YR 5/2) silt loam; common medium faint dark grayish brown (10YR 4/2) and common fine and medium prominent strong brown (7.5YR 4/6) mottles; massive; friable; common fine roots; thin bands of dark brown (10YR 3/3) organic material between depths of 27 and 33 inches; slightly acid; clear smooth boundary.

Cg1—33 to 42 inches; variegated dark gray (10YR 4/1) and dark grayish brown (10YR 4/2) silt loam; few medium distinct grayish brown (10YR 5/2) and common fine prominent strong brown (7.5YR 4/6) mottles; massive; friable; common fine and medium manganese stains; slightly acid; clear smooth boundary.

Cg2—42 to 60 inches; dark grayish brown (10YR 4/2) silt loam; common medium faint grayish brown (10YR 5/2) and common medium prominent yellowish brown (10YR 5/6) mottles; massive; friable; many fine and medium manganese stains; moderately acid.

Range in Characteristics

Ap horizon:
Value—4 or 5
Chroma—2 or 3

C horizon:
Value—4 or 5
Chroma—1 to 3

Worthen Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Terraces
Parent material: Alluvium
Slope range: 1 to 4 percent
Taxonomic class: Fine-silty, mixed, mesic Cumulic Hapludolls

Typical Pedon

Worthen silt loam, 1 to 4 percent slopes, 1,600 feet east and 680 feet south of the northwest corner of sec. 6, T. 4 S., R. 7 W.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; friable; few fine roots; slightly acid; clear smooth boundary.

A—8 to 14 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; friable; few fine roots; neutral; clear smooth boundary.

AB—14 to 22 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; few fine roots; neutral; abrupt smooth boundary.

Bw1—22 to 31 inches; dark brown (10YR 3/3) silt loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds and lining pores; neutral; abrupt smooth boundary.

Bw2—31 to 41 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine subangular blocky structure; friable; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and lining pores; neutral; clear smooth boundary.

Bw3—41 to 60 inches; brown (10YR 4/3) silt loam; few fine distinct strong brown (7.5YR 4/6) mottles; moderate fine subangular blocky structure; friable; common faint very dark grayish brown (10YR 3/2) organic coatings lining pores; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 36 inches

A or Ap horizon:
Value—2 or 3
Chroma—1 or 2

Bw horizon:
Value—3 or 4
Chroma—2 to 4

Formation of the Soils

Soil-forming processes act on deposited or accumulated geologic material. The characteristics of the soil are determined by the physical and mineralogical composition of the parent material; the climate under which the soil material has accumulated and existed since accumulation; the kind of plant and animal life on and in the soil; the topography; and the length of time that the processes of soil formation have acted on the soil material (Jenny, 1941). These factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effect of any one factor unless conditions are specified for the other four.

Climate and plant and animal life, chiefly plants, are active factors of soil formation. They act on the parent material that has accumulated through the weathering of rocks and slowly change it to a natural body that has genetically related horizons. The effects of climate and plant and animal life are conditioned by relief. The parent material affects the kind of soil profile that forms and, in extreme cases, determines it almost entirely. Finally, time is needed for changing the parent material into a soil. Some time is always needed for the differentiation of soil horizons. Usually, a long time is needed for the development of distinct horizons.

Parent Material

Parent material is the unconsolidated geologic material in which the soil forms. It determines the chemical and mineralogical composition of the soil. The dominant parent materials in Pike County are loess, alluvium, glacial till, outwash, and material weathered from bedrock.

The Mississippi and Illinois River valleys received tremendous amounts of glacial meltwater as glaciers to the north retreated. This glacial meltwater contained large amounts of sediment, which dried as the glaciers receded. The river valleys were then left exposed, and predominantly westerly winds picked up the silt or loess and transported it many miles downwind. Generally, the loess is thicker on the western side of the county, is thinner toward the east, and is thicker again at the Illinois River bluffs. It ranges from a few inches to more than 80 feet in thickness (Willman and others, 1975). Many of the upland soils in the county formed entirely in loess. Examples of these soils are Downs, Rozetta, Fayette, Seaton, Sylvan, Tama, and Hamburg soils.

Glacial till is material laid down directly by glaciers with a minimum of water action. It consists of particles of different sizes mixed together. The small pebbles in glacial till generally have distinct edges and corners, indicating that they have not been subject to intense washing by water. The glacial till in the northeastern part of Pike County was deposited during the Illinoian Stage of glaciation. The glacial till in the northwestern part of Pike County was deposited during the Kansan Stage. The central and extreme southern parts of the county were not covered by glaciers (fig. 9). In Pike County, the soils that formed in glacial till generally are on strongly sloping to very steep side slopes. Hickory soils are examples. These soils formed mainly in Illinoian-aged glacial till that is covered in places by a thin layer of loess.

In some areas a very firm layer higher in content of clay is in the upper few feet of the glacial till. This layer is a paleosol, which formed during the Yarmouthian or Sangamonian interglacial stage, between the Kansan and Illinoian or between the Illinoian and Wisconsinan glacial stages. During the interglacial stages, the glacial till was the surface deposit. It was subject to soil-forming processes. During the Wisconsinan Stage, these soils were buried by loess deposits. Ursa soils are examples of soils that formed in a thin layer of loess and in the underlying till that has a paleosol.

Outwash was deposited by running water from melting glaciers. The size of the particles that make up outwash varies according to the speed of the stream that carried them. When the water slowed down, the coarser textured material was deposited first. The finer particles were carried a greater distance by the more slowly moving water. El Dara soils formed in outwash.

In the north-central part of Pike County is a deposit of sand and gravel of Cretaceous age (fig. 9).

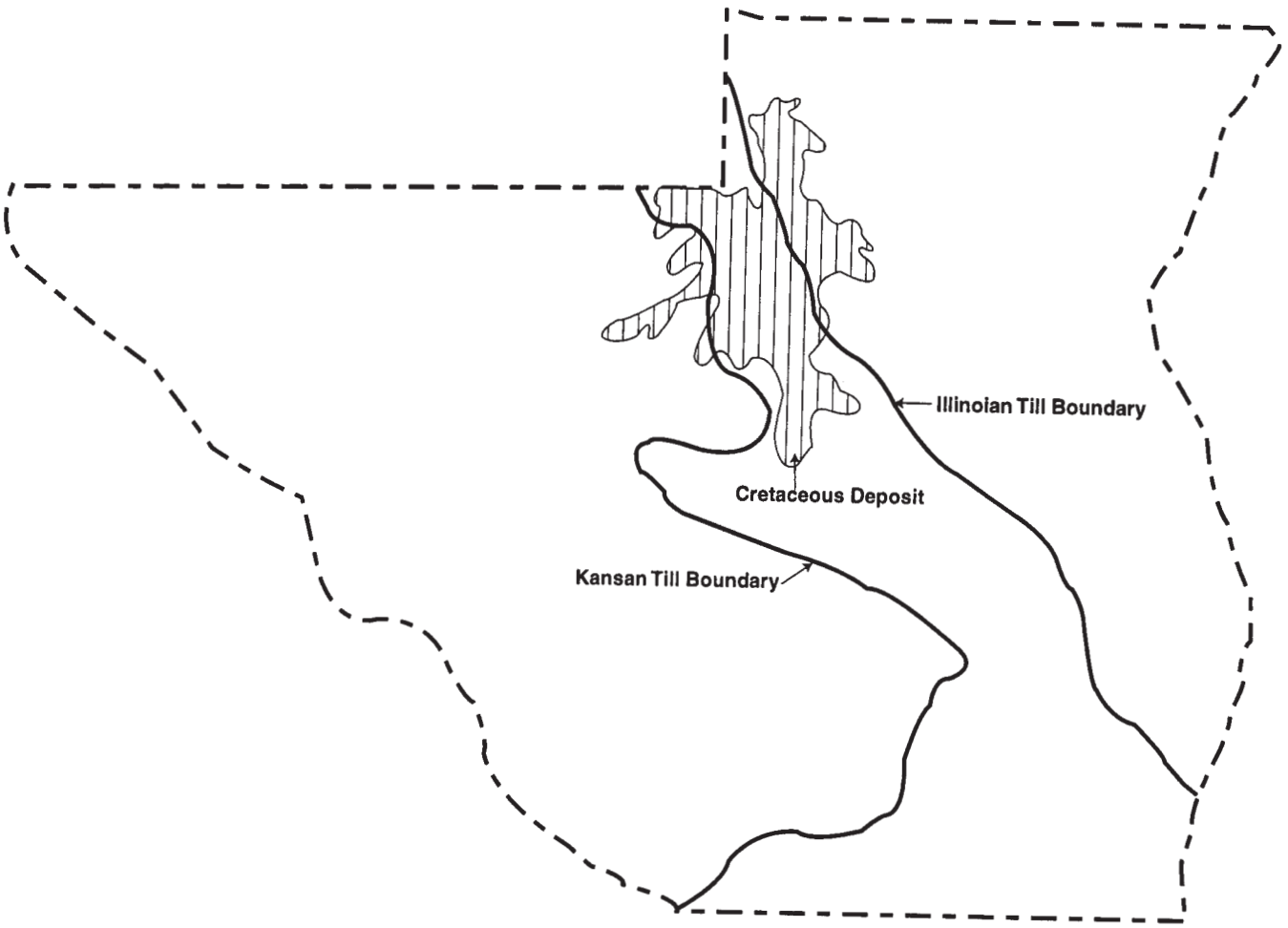

Figure 9.—Glacial till boundaries and location of Cretaceous deposits in Pike County.

The prominent ridge forming the divide between the Illinois River and Mississippi River drainage is made by this deposit. The formation extends to the northwest from a point northwest of Pittsfield nearly 10 miles into Adams County (Frye and Willman, 1964). El Dara and Blair soils formed in these Cretaceous deposits.

On many of the strongly sloping to very steep side slopes throughout the uplands, the soils formed in material weathered from bedrock. Goss soils formed mostly in material weathered from Mississippian-age cherty limestone. Baylis soils formed in 20 to 40 inches of loess and in the underlying cherty material weathered from this same kind of limestone. Elizabeth soils formed mostly in dolomitic limestone of Silurian, Devonian, or Mississippian age and are less than 20 inches deep over bedrock. Lacrescent soils formed in colluvial material weathered from dolomitic limestone similar to the material in which the Elizabeth soils formed, but the Lacrescent soils are very deep over the bedrock. Gosport soils formed in a thin layer of loess and in the underlying material weathered from Pennsylvanian-age shale.

In the valleys of Pike County, waterlaid deposits of Cahokia Alluvium (Willman and others, 1975) form the flood plains. These sediments were deposited mainly during periods of stream overflow. Coarser materials were deposited during periods of fast stream overflow, and finer materials were deposited when the overflow slowed down. The flood plains along the smaller creeks in the county are generally underlain by silty alluvium. Haymond and Wakeland soils are dominant in these areas. On the flood plains along the Illinois and Mississippi Rivers, the alluvium is more varied. In areas closer to stream channels, the alluvium is sandy or loamy. Ambraw, Ceresco, Sarpy, and Shaffton soils are examples of soils that formed in sandy or loamy alluvium. In some areas the sandy alluvium was reworked and moved by the wind after the initial deposition. Sparta soils formed in

sandy windblown material. Farther from the stream channels, the alluvium is dominantly silty. Beaucoup, Coffeen, Orion, and Wakeland soils are dominant in these areas. Many old river-bottom lakes that are drained contain fine textured alluvial sediments. Titus and Darwin soils are dominant in these areas. On alluvial fans and footslopes next to bluffs, local alluvium has accumulated as a result of gravitational action. This alluvium is the parent material of Raddle and Worthen soils.

Climate

Climate is important in the formation of soils. It determines the kind of plant and animal life on and in the soil. It also determines the amount of water available for the weathering of minerals and the transporting of soil materials. Through its influence on soil temperature, climate determines the rate of chemical reaction that occurs in the soil. These influences are important, but they affect large areas rather than a relatively small area, such as a county.

The climate in Pike County is temperate and humid. It is presumably similar to the climate that existed when the soils were formed. The soils in Pike County differ from those that formed in a hot, moist climate or a warm, dry climate. The climate is uniform throughout the county, although its effect is modified locally by relief. Therefore, to a minor extent, the differences in the soils of Pike County are a result of differences in climate.

Heavy, untimely rains are harmful and destructive when they fall on soils that are left exposed during farming activities. Early spring rains can cause extensive erosion because the soil is still partially frozen. This condition restricts water infiltration and thus increases the runoff rate.

Plant and Animal Life

Plants are the principal living organisms affecting the soils in Pike County, but micro-organisms, earthworms, insects, and large burrowing animals also are important. Human activities have also played an important role in the formation of the soils in the county.

The main contribution of plant and animal life is the addition of organic matter and nitrogen to the soil. The kind of organic material on and in the soil depends on the kind of plants that grew on the soil. The remains of these plants accumulate in or on the surface layer, decay, and eventually become organic matter. The roots of the plants provide channels for the downward movement of water through the soil and also add organic matter as they decay. Burrowing animals, such as earthworms, cicadas, and groundhogs, help to incorporate the organic matter so that it can be used by growing plants. Humans have greatly altered the surface layer and the soil environment by clearing the forests and plowing the soil. Soil layers have been mixed, soil has been moved from place to place, fertilizer and lime have been added, and new plants have been introduced. In places, accelerated erosion has removed most of the original surface layer and exposed the less desirable subsoil layers.

Most of the soils in Pike County formed under hardwood forests, dominated by oak and hickory. These forests contributed organic matter to the soil mainly in the form of leaf litter. Their root systems are less fibrous than those of grasses, and generally the roots are not densely concentrated near the surface. Soils that formed under forest vegetation characteristically have a thinner and lighter colored surface layer and a leached, lighter colored subsurface layer than the soils that formed under prairie grasses. Fayette, Seaton, and Stronghurst are examples of soils that formed under forest vegetation.

Prairie grasses have many fibrous roots that add large amounts of organic matter to the soil as they die and decay, especially when they are concentrated near the surface. As a result, soils that formed under prairie vegetation have a thick, dark surface layer. Examples of prairie soils in Pike County are Ipava, Herrick, Tama, and Virden soils.

Some soils formed under mixed forest and grass or were forested for a short time before being cleared. These soils have a moderately dark surface layer and are intermediate in content of organic matter. Examples of these transitional soils are Atterberry, Clarksdale, and Downs soils.

Topography

Topography, or relief, has had a marked influence on the soils of Pike County through its effect on natural drainage, erosion, plant cover, and soil temperature. Slopes in the county range from 0 to 70 percent. Natural soil drainage ranges from somewhat excessively drained and well drained on sloping ridgetops and side slopes to poorly drained on the nearly level bottom land and in nearly level areas on uplands.

Topography largely determines how much water infiltrates into the soil or how much runs off the soil. Runoff is greatest and infiltration is lowest on the steeper slopes. In general, the runoff rate is lower and the rate of water infiltration increases as the

slope decreases. In low areas, however, water is temporarily ponded because runoff from adjacent slopes accumulates in these areas.

Natural drainage is also influenced by topography. Through its effect on aeration of the soil, the drainage determines the color of the subsoil. Water and air move freely through soils that are well drained, but they move slowly through soils that are poorly drained. In soils that are well aerated, the iron and aluminum compounds that give most soils their color are brightly colored and oxidized, and in poorly aerated soils the colors are a dull gray and mottled. In the nearly level, poorly drained Twomile soils, the water table is at or near the surface during the spring. These soils are poorly aerated, and the subsoil is a dull gray color. In the more sloping, well drained Seaton soils, the water table is lower and some rainfall runs off instead of infiltrating into the soil. The soil pores contain less water and much more air. The iron and aluminum compounds are well oxidized, and the subsoil is a brown, bright color.

Topography also greatly influences the intensity of soil erosion. Although some erosion occurs on almost all sloping soils, the hazard of erosion generally increases as slope and runoff increase.

Time

A long time is required for the development of distinct soil profiles. The length of time required depends mainly on the kind and nature of the parent materials and the topography. Plant and animal life and climate have comparatively less influence on the rate of soil development. With the exception of soils that formed in recent alluvium, most of the soils in Pike County have been forming long enough that the interaction of the soil-forming factors is evident.

Soils that formed in recent sediments have weak horizon development. The surface layer of these soils may show a slight increase in organic matter content, and the subsoil may have weak structure. Haymond and Wakeland soils are examples of soils that formed in recent sediments.

The weathering process in soils occurs over a long period of time. This process causes some of the finer material in the surface layer to move into the subsoil and may change the structure and color of the subsoil. If a soil remains in place long enough, distinct layers or horizons are evident. Examples of soils that have distinct profile characteristics are Seaton, Fayette, and Rozetta soils.

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Glossary

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

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

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

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

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

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

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

Argillic horizon. A subsoil horizon characterized by an accumulation of clay.

Association, soil. A group of soils 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

Basal till. Compact glacial till deposited beneath the ice.

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.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

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

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

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

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 but 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.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6

inches along the longest axis. A single piece is called a channer.

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 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 slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles 2 millimeters to 38 centimeters (15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

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 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 are somewhat similar in all areas.

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

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

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

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. 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.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused

by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

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.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on 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 (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 (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

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.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

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*.

Fine textured soil. Sandy clay, silty clay, or clay.

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

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Footslope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Free carbonates. Generally refers to the combination of calcium and calcium dioxide (calcium carbonate) that effervesces visibly when treated with cold hydrochloric acid.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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.

Geomorphic processes. Natural geologic forces, such as glaciation, that change the features on the surface of the earth.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

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 up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 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.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

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

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

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. The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

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, any plowed or disturbed surface layer.

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 O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon 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) granular, 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 horizon. 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.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but 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-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

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.

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

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.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

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.

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. Fine grained material, dominantly of silt-sized particles, deposited by the wind.

Low strength. The soil is not strong enough to support loads.

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. Nearly all such rocks are crystalline.

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. An area 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 structure. It may include the upper part of the subsoil.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

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. Mottling generally indicates poor aeration and impeded drainage. 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).

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.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

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.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

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.

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.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables

water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 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

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

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.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

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.

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.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in 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:

Extremely acid	below 4.5
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

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

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 ground water.

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.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest

bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite (soil science). Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

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 or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. 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.

Shoulder. The geomorphic component that forms the uppermost inclined surface at the top of a hillslope. It makes up the transition zone from backslope to summit of an upland. The surface is dominantly convex in profile and erosional in origin.

Side slope. The slope bounding a drainageway and lying between the drainageway and the adjacent interfluve. It is generally linear along the slope width, and overland flow is parallel down the slope.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

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

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

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.

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

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

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.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

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 over periods 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 substratum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

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.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which 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 grained* (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. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. A general term for the top, or highest level, of an upland feature, such as a hill.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 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. It includes all subdivisions of these horizons.

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.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. 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.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt 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). A layer of otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

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.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the 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.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1951-80 at Griggsville, Illinois)

Month	Temperature						Precipitation				
				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	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	34.3	16.3	25.3	65	-13	19	1.53	0.61	2.31	3	6.2
February	40.0	21.4	30.7	69	-8	36	1.49	.82	2.07	3	5.1
March	50.7	30.2	40.4	81	3	145	3.03	1.44	4.41	6	5.2
April	65.5	43.0	54.2	87	23	431	3.68	2.00	5.16	6	.8
May	75.3	53.0	64.1	92	34	746	4.11	2.32	5.71	6	.0
June	84.0	61.9	73.0	97	46	987	3.74	1.73	5.47	5	.0
July	88.2	65.7	76.9	101	50	1,141	3.82	1.59	5.71	5	.0
August	85.8	63.3	74.5	100	48	1,064	3.53	1.80	5.04	5	.0
September	79.5	55.7	67.6	96	37	824	3.57	1.41	5.38	5	.0
October	68.1	45.2	55.7	89	25	509	3.10	1.44	4.53	4	.0
November	52.4	33.3	42.8	77	8	181	2.20	1.06	3.18	4	2.0
December	39.8	22.8	31.3	68	-6	40	2.09	.86	3.13	4	5.4
Yearly:											
Average	63.6	42.7	53.1	---	---	---	---	---	---	---	---
Extreme	115	-19	---	103	-15	---	---	---	---	---	---
Total	---	---	---	---	---	6,120	35.89	26.04	43.34	56	24.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1951-80 at Griggsville, Illinois)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 11	Apr. 21	Apr. 30
2 years in 10 later than--	Apr. 6	Apr. 16	Apr. 25
5 years in 10 later than--	Mar. 27	Apr. 7	Apr. 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 25	Oct. 13	Oct. 7
2 years in 10 earlier than--	Oct. 30	Oct. 18	Oct. 11
5 years in 10 earlier than--	Nov. 9	Oct. 28	Oct. 20

Table 3.--Growing Season

(Recorded in the period 1951-80 at Griggsville, Illinois)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	204	186	165
8 years in 10	211	191	172
5 years in 10	226	203	186
2 years in 10	240	214	200
1 year in 10	248	220	208

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
5C2	Blair silt loam, 5 to 10 percent slopes, eroded	3,770	0.7
5C3	Blair silty clay loam, 5 to 10 percent slopes, severely eroded	710	0.1
5D2	Blair silt loam, 10 to 15 percent slopes, eroded	1,805	0.3
5D3	Blair silty clay loam, 10 to 15 percent slopes, severely eroded	815	0.1
8D2	Hickory silt loam, 10 to 15 percent slopes, eroded	3,660	0.7
8D3	Hickory silty clay loam, 10 to 15 percent slopes, severely eroded	1,015	0.2
8E	Hickory loam, 15 to 30 percent slopes	425	*
8E2	Hickory silt loam, 15 to 30 percent slopes, eroded	6,040	1.1
8G	Hickory silt loam, 30 to 60 percent slopes	1,875	0.3
17A	Keomah silt loam, 0 to 2 percent slopes	1,270	0.2
17B	Keomah silt loam, 2 to 5 percent slopes	1,510	0.3
19B2	Sylvan silt loam, 2 to 5 percent slopes, eroded	1,530	0.3
19C2	Sylvan silt loam, 5 to 10 percent slopes, eroded	1,150	0.2
19C3	Sylvan silty clay loam, 5 to 10 percent slopes, severely eroded	1,700	0.3
19D3	Sylvan silty clay loam, 10 to 15 percent slopes, severely eroded	1,735	0.3
30F	Hamburg silt, 20 to 30 percent slopes	200	*
30G	Hamburg silt, 30 to 65 percent slopes	670	0.1
36B	Tama silt loam, 1 to 5 percent slopes	4,080	0.8
37B	Worthen silt loam, 1 to 4 percent slopes	1,155	0.2
43A	Ipava silt loam, 0 to 2 percent slopes	2,090	0.4
43B	Ipava silt loam, 2 to 5 percent slopes	535	*
46	Herrick silt loam	200	*
50	Virden silt loam	670	0.1
61	Atterberry silt loam	6,205	1.1
75B	Drury silt loam, 2 to 5 percent slopes	2,820	0.5
75C	Drury silt loam, 5 to 10 percent slopes	845	0.2
119D2	Elco silt loam, 10 to 15 percent slopes, eroded	2,600	0.5
119D3	Elco silty clay loam, 10 to 15 percent slopes, severely eroded	535	*
119E2	Elco silt loam, 15 to 25 percent slopes, eroded	1,480	0.3
242A	Kendall silt loam, 0 to 2 percent slopes	50	*
257A	Clarksdale silt loam, 0 to 2 percent slopes	490	*
257B	Clarksdale silt loam, 2 to 5 percent slopes	1,200	0.2
264D3	El Dara sandy loam, 10 to 15 percent slopes, severely eroded	1,095	0.2
264E	El Dara fine sandy loam, 15 to 30 percent slopes	75	*
264E2	El Dara fine sandy loam, 15 to 30 percent slopes, eroded	1,590	0.3
264G	El Dara fine sandy loam, 30 to 50 percent slopes	500	*
271C3	Timula silt loam, 5 to 10 percent slopes, severely eroded	2,170	0.4
271D3	Timula silt loam, 10 to 15 percent slopes, severely eroded	1,055	0.2
271E2	Timula silt loam, 15 to 30 percent slopes, eroded	1,965	0.4
274B	Seaton silt loam, 2 to 5 percent slopes	2,785	0.5
274C2	Seaton silt loam, 5 to 10 percent slopes, eroded	5,380	1.0
274C3	Seaton silt loam, 5 to 10 percent slopes, severely eroded	625	0.1
274D2	Seaton silt loam, 10 to 15 percent slopes, eroded	4,445	0.8
274D3	Seaton silt loam, 10 to 15 percent slopes, severely eroded	1,005	0.2
274E	Seaton silt loam, 15 to 30 percent slopes	275	*
274E2	Seaton silt loam, 15 to 30 percent slopes, eroded	11,240	2.1
274G	Seaton silt loam, 30 to 50 percent slopes	9,525	1.8
278A	Stronghurst silt loam, 0 to 2 percent slopes	2,735	0.5
278B	Stronghurst silt loam, 2 to 5 percent slopes	10,445	1.9
279B	Rozetta silt loam, 2 to 5 percent slopes	34,135	6.3
279C2	Rozetta silt loam, 5 to 10 percent slopes, eroded	49,840	9.2
279C3	Rozetta silty clay loam, 5 to 10 percent slopes, severely eroded	6,315	1.2
280B	Fayette silt loam, 2 to 5 percent slopes	9,090	1.7
280C2	Fayette silt loam, 5 to 10 percent slopes, eroded	25,635	4.7
280C3	Fayette silty clay loam, 5 to 10 percent slopes, severely eroded	2,255	0.4
280D2	Fayette silt loam, 10 to 15 percent slopes, eroded	28,370	5.2
280D3	Fayette silty clay loam, 10 to 15 percent slopes, severely eroded	11,580	2.1
280E2	Fayette silt loam, 15 to 30 percent slopes, eroded	17,655	3.2
386B	Downs silt loam, 2 to 5 percent slopes	20,735	3.8
386C2	Downs silt loam, 5 to 10 percent slopes, eroded	5,895	1.1
403G	Elizabeth very channery silt loam, 30 to 60 percent slopes	2,375	0.4
430B	Raddle silt loam, 1 to 5 percent slopes	3,710	0.7

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
472D2	Baylis silt loam, 10 to 15 percent slopes, eroded	2,020	0.4
472E2	Baylis silt loam, 15 to 30 percent slopes, eroded	10,455	1.9
551E2	Gosport silt loam, 15 to 30 percent slopes, eroded	905	0.2
551G	Gosport silt loam, 30 to 60 percent slopes	530	*
605D2	Ursa silt loam, 10 to 15 percent slopes, eroded	435	*
605D3	Ursa silty clay loam, 10 to 15 percent slopes, severely eroded	205	*
605E2	Ursa silt loam, 15 to 20 percent slopes, eroded	315	*
606E	Goss gravelly silt loam, 15 to 30 percent slopes	10,520	1.9
606G	Goss gravelly silt loam, 30 to 60 percent slopes	11,710	2.2
785G	Lacrescent channery silt loam, 30 to 70 percent slopes	695	0.1
815	Udorthents, silty	2,605	0.5
864	Pits, quarries	240	*
865	Pits, gravel	190	*
937E	Seaton-Hickory complex, 15 to 30 percent slopes	100	*
3028	Jules silt loam, frequently flooded	1,505	0.3
3070	Beaucoup silt loam, frequently flooded	1,335	0.2
3070L	Beaucoup silt loam, frequently flooded, long duration	6,640	1.2
3071L	Darwin silty clay loam, frequently flooded, long duration	55	*
3092	Sarpy loamy sand, frequently flooded	65	*
3092L	Sarpy loamy sand, frequently flooded, long duration	685	0.1
3302	Ambraw silty clay loam, sandy substratum, frequently flooded	600	0.1
3302L	Ambraw silty clay loam, frequently flooded, long duration	2,465	0.5
3331	Haymond silt loam, frequently flooded	5,460	1.0
3331L	Haymond silt loam, frequently flooded, long duration	290	*
3333	Wakeland silt loam, frequently flooded	17,785	3.3
3333L	Wakeland silt loam, frequently flooded, long duration	4,985	0.9
3404	Titus silty clay loam, frequently flooded	345	*
3404L	Titus silty clay loam, frequently flooded, long duration	3,105	0.6
3415	Orion silt loam, frequently flooded	4,250	0.8
3415L	Orion silt loam, frequently flooded, long duration	495	*
3428	Coffeen silt loam, frequently flooded	2,480	0.5
3428L	Coffeen silt loam, frequently flooded, long duration	555	0.1
3475	Elsah gravelley loam, frequently flooded	7,205	1.3
3475L	Elsah gravelley loam, frequently flooded, long duration	35	*
4070	Beaucoup silty clay loam, ponded	530	*
7088	Sparta loamy fine sand, rarely flooded	1,730	0.3
8070	Beaucoup silty clay loam, occasionally flooded	18,630	3.4
8071	Darwin silty clay loam, occasionally flooded	7,285	1.3
8092	Sarpy loamy fine sand, occasionally flooded	150	*
8180	Dupo silt loam, occasionally flooded	800	0.1
8183	Shaffton silty clay loam, occasionally flooded	6,355	1.2
8217	Twomile silt loam, occasionally flooded	5,630	1.0
8284	Tice silt loam, occasionally flooded	3,545	0.7
8288	Petrolia silt loam, occasionally flooded	1,335	0.2
8302	Ambraw loam, occasionally flooded	4,175	0.8
8331	Haymond silt loam, occasionally flooded	3,780	0.7
8333	Wakeland silt loam, occasionally flooded	7,895	1.5
8341	Ambraw silt loam, sandy substratum, occasionally flooded	2,395	0.4
8395	Ceresco loam, occasionally flooded	2,605	0.5
8396	Vesser silt loam, occasionally flooded	4,635	0.9
8404	Titus silty clay, occasionally flooded	6,075	1.1
8415	Orion silt loam, occasionally flooded	3,340	0.6
8428	Coffeen silt loam, occasionally flooded	14,900	2.7
8451	Lawson silt loam, occasionally flooded	805	0.1
8452	Riley silty clay loam, occasionally flooded	50	*
8789	Ambraw-Ceresco-Sarpy complex, occasionally flooded	1,910	0.4
	Water	14,800	2.7
	Total	543,955	100.0

* Less than 0.1 percent.

Table 5.--Prime Farmland

Map symbol	Soil name
17A	Keomah silt loam, 0 to 2 percent slopes (where drained)
17B	Keomah silt loam, 2 to 5 percent slopes
19B2	Sylvan silt loam, 2 to 5 percent slopes, eroded
36B	Tama silt loam, 1 to 5 percent slopes
37B	Worthen silt loam, 1 to 4 percent slopes
43A	Ipava silt loam, 0 to 2 percent slopes
43B	Ipava silt loam, 2 to 5 percent slopes
46	Herrick silt loam
50	Virden silt loam (where drained)
61	Atterberry silt loam (where drained)
75B	Drury silt loam, 2 to 5 percent slopes
242A	Kendall silt loam, 0 to 2 percent slopes (where drained)
257A	Clarksdale silt loam, 0 to 2 percent slopes (where drained)
257B	Clarksdale silt loam, 2 to 5 percent slopes
274B	Seaton silt loam, 2 to 5 percent slopes
278A	Stronghurst silt loam, 0 to 2 percent slopes (where drained)
278B	Stronghurst silt loam, 2 to 5 percent slopes
279B	Rozetta silt loam, 2 to 5 percent slopes
280B	Fayette silt loam, 2 to 5 percent slopes
386B	Downs silt loam, 2 to 5 percent slopes
430B	Raddle silt loam, 1 to 5 percent slopes
3028	Jules silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3070	Beaucoup silt loam, frequently flooded (where drained and protected from flooding or not frequently flooded during the growing season)
3302	Ambraw loam, occasionally flooded (where drained and protected from flooding or not frequently flooded during the growing season)
3331	Haymond silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3333	Wakeland silt loam, frequently flooded (where drained and protected from flooding or not frequently flooded during the growing season)
3404	Titus silty clay loam, frequently flooded (where drained and protected from flooding or not frequently flooded during the growing season)
3415	Orion silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3428	Coffeen silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
8070	Beaucoup silty clay loam, occasionally flooded (where drained)
8071	Darwin silty clay loam, occasionally flooded (where drained)
8180	Dupo silt loam, occasionally flooded
8183	Shaffton silty clay loam, occasionally flooded
8284	Tice silt loam, occasionally flooded
8288	Petrolia silt loam, occasionally flooded (where drained)
8302	Ambraw loam, occasionally flooded (where drained)
8331	Haymond silt loam, occasionally flooded
8333	Wakeland silt loam, occasionally flooded (where drained)
8341	Ambraw silt loam, sandy substratum, occasionally flooded (where drained)
8395	Ceresco loam, occasionally flooded
8396	Vesser silt loam, occasionally flooded
8404	Titus silty clay, occasionally flooded (where drained)
8415	Orion silt loam, occasionally flooded
8428	Coffeen silt loam, occasionally flooded
8451	Lawson silt loam, occasionally flooded
8452	Riley silty clay loam, occasionally flooded

Table 6.--Land Capability and Yields per Acre of Crops and Pasture

(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	Corn	Soybeans	Winter wheat	Bromegrass-alfalfa	Orchardgrass-alfalfa hay
		Bu	Bu	Bu	AUM*	Tons
5C2--- Blair	IIIe	89	31	41	5.8	3.5
5C3--- Blair	IVe	82	29	38	5.4	3.2
5D2--- Blair	IVe	85	30	40	5.6	3.3
5D3--- Blair	VIe	---	---	---	5.1	2.4
8D2--- Hickory	IIIe	72	23	26	4.5	2.7
8D3--- Hickory	IVe	66	22	24	4.1	2.5
8E--- Hickory	VIe	---	---	24	4.2	2.4
8E2--- Hickory	VIe	---	---	---	3.6	2.4
8G--- Hickory	VIIe	---	---	---	3.0	---
17A--- Keomah	IIw	129	39	52	8.8	5.1
17B--- Keomah	IIe	128	39	51	8.6	5.0
19B2--- Sylvan	IIe	108	34	51	8.0	4.8
19C2--- Sylvan	IIIe	105	33	50	7.8	4.7
19C3--- Sylvan	IVe	97	30	46	7.2	4.3
19D3--- Sylvan	VIe	---	---	---	6.9	4.1
30F--- Hamburg	VIIe	---	---	---	3.0	---
30G--- Hamburg	VIIe	---	---	---	2.6	---
36B--- Tama	IIe	153	46	61	9.7	5.8
37B--- Worthen	IIe	149	46	61	9.7	5.8

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Bromegrass-alfalfa	Orchardgrass-alfalfa hay
		Bu	Bu	Bu	AUM*	Tons
43A---------- Ipava	I	163	52	66	10.2	6.1
43B---------- Ipava	IIe	161	51	65	10.1	6.0
46---------- Herrick	IIw	141	45	61	9.2	5.5
50---------- Virden	IIw	144	46	57	---	---
61---------- Atterberry	I	149	44	60	9.0	5.6
75B---------- Drury	IIe	125	40	56	8.2	4.9
75C---------- Drury	IIIe	122	39	55	7.8	4.9
119D2---------- Elco	IIIe	101	33	42	6.6	4.0
119D3---------- Elco	IVe	90	30	39	5.9	3.3
119E2---------- Elco	VIe	---	---	---	5.4	3.4
242A---------- Kendall	IIw	135	41	55	8.7	5.2
257A---------- Clarksdale	I	140	43	57	8.8	5.3
257B---------- Clarksdale	IIe	139	43	56	8.7	5.2
264D3---------- El Dara	VIe	---	---	---	4.8	2.9
264E---------- El Dara	VIe	---	---	---	4.9	3.0
264E2---------- El Dara	VIe	---	---	---	3.8	2.9
264G---------- El Dara	VIIe	---	---	---	2.7	---
271C3---------- Timula	IVe	90	30	40	6.1	3.7
271D3---------- Timula	IVe	85	29	38	5.8	3.5
271E2---------- Timula	VIe	---	---	---	5.9	3.5

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Bromegrass-alfalfa	Orchardgrass-alfalfa hay
		Bu	Bu	Bu	AUM*	Tons
274B---------- Seaton	IIe	116	35	49	7.8	4.8
274C2---------- Seaton	IIIe	110	33	46	7.4	4.7
274C3---------- Seaton	IVe	102	30	43	6.8	4.2
274D2---------- Seaton	IIIe	105	32	46	7.1	4.5
274D3---------- Seaton	IVe	97	29	41	6.5	4.0
274E---------- Seaton	VIe	---	---	---	6.2	3.8
274E2---------- Seaton	VIe	---	---	---	6.0	3.7
274G---------- Seaton	VIIe	---	---	---	4.5	---
278A---------- Stronghurst	IIw	138	42	55	8.8	5.3
278B---------- Stronghurst	IIe	137	42	54	8.7	5.2
279B---------- Rozetta	IIe	130	40	53	8.6	5.1
279C2---------- Rozetta	IIIe	123	38	51	8.2	4.9
279C3---------- Rozetta	IVe	112	35	46	7.6	4.5
280B---------- Fayette	IIe	128	39	52	8.6	5.1
280C2---------- Fayette	IIIe	121	37	50	8.1	4.9
280C3---------- Fayette	IVe	112	34	45	7.5	4.5
280D2---------- Fayette	IIIe	119	36	49	7.8	4.8
280D3---------- Fayette	IVe	107	32	44	7.2	4.3
280E2---------- Fayette	VIe	---	---	---	6.8	4.3
386B---------- Downs	IIe	147	43	58	9.2	5.5

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Bromegrass-alfalfa	Orchardgrass-alfalfa hay
		Bu	Bu	Bu	AUM*	Tons
386C2--Downs	IIIe	139	40	55	8.7	5.3
403G--Elizabeth	VIIs	---	---	---	1.4	---
430B--Raddle	IIe	148	45	58	9.6	5.7
472D2--Baylis	VIe	---	---	---	5.1	3.1
472E2--Baylis	VIIe	---	---	---	4.5	2.7
551E2--Gosport	VIIe	---	---	---	3.3	3.5
551G--Gosport	VIIe	---	---	---	3.3	---
605D2--Ursa	IVe	54	15	19	3.4	2.1
605D3--Ursa	VIe	---	---	---	2.8	1.7
605E2--Ursa	VIe	---	---	---	3.2	1.9
606E--Goss	VIIe	---	---	---	2.4	1.4
606G--Goss	VIIe	---	---	---	1.5	1.0
785G--Lacrescent	VIIe	---	---	---	1.4	---
815--Udorthents	I	88	23	31	---	---
864, 865. Pits						
937E:						
Seaton	VIe	---	---	---	6.2	3.6
Hickory	VIe	---	---	---	5.4	2.8
3028--Jules	IIw	83	27	---	5.6	3.3
3070--Beaucoup	IIIw	124	41	50	---	---
3070L--Beaucoup	Vw	---	---	---	---	---

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Bromegrass-alfalfa	Orchardgrass-alfalfa hay
		Bu	Bu	Bu	AUM*	Tons
3071L---------- Darwin	Vw	---	---	---	---	---
3092---------- Sarpy	IVs	60	22	---	2.9	2.0
3092L---------- Sarpy	IVs	50	18	---	2.9	---
3302, 3302L------ Ambraw	Vw	---	---	---	---	---
3331---------- Haymond	IIw	126	41	---	8.0	4.0
3331L---------- Haymond	IIIw	120	35	---	6.0	---
3333---------- Wakeland	IIw	121	41	---	5.8	4.1
3333L---------- Wakeland	IVw	95	32	---	4.3	---
3404---------- Titus	IVw	113	38	---	---	---
3404L---------- Titus	Vw	---	---	---	---	---
3415---------- Orion	IIw	122	39	---	5.8	---
3415L---------- Orion	IVw	95	39	---	4.3	---
3428---------- Coffeen	IIw	137	42	---	6.4	4.1
3428L---------- Coffeen	IVw	106	33	---	4.8	---
3475---------- Elsah	IIs	102	35	---	4.4	4.6
3475L---------- Elsah	IIIw	90	30	---	3.6	---
4070---------- Beaucoup	Vw	---	---	---	---	---
7088---------- Sparta	IVs	84	29	37	5.5	3.3
8070---------- Beaucoup	IIw	138	46	55	---	---
8071---------- Darwin	IIIw	99	35	47	---	---

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Bromegrass-alfalfa	Orchardgrass-alfalfa hay
		Bu	Bu	Bu	AUM*	Tons
8092--- Sarpy	IVs	71	26	34	5.0	3.0
8180--- Dupo	IIIw	132	43	55	6.1	4.1
8183--- Shaffton	IIw	130	43	52	8.7	5.3
8217--- Twomile	IIIw	86	30	33	5.0	3.6
8284--- Tice	IIw	152	47	61	8.1	4.8
8288--- Petrolia	IIIw	132	43	49	---	---
8302--- Ambraw	IIw	132	43	52	---	---
8331--- Haymond	IIw	140	45	60	8.8	4.1
8333--- Wakeland	IIw	135	42	57	7.8	4.1
8341--- Ambraw	IIw	125	40	50	6.5	---
8395--- Ceresco	IIw	115	40	50	7.5	4.1
8396--- Vesser	IIw	126	42	50	6.5	3.9
8404--- Titus	IIIw	125	42	52	---	---
8415--- Orion	IIw	135	43	52	7.8	4.5
8428--- Coffeen	IIw	152	47	57	8.0	4.6
8451--- Lawson	IIw	161	48	62	8.2	5.5
8452--- Riley	IIw	122	41	55	7.8	4.7
8789:						
Ambraw---	IIw	125	40	50	---	---
Ceresco---	IIw	115	40	50	7.5	4.1
Sarpy---	IVs	71	26	34	5.0	3.0

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 7.--Woodland Management and Productivity

(See text for definitions of "slight," "moderate," and "severe." Only the soils suitable for production of commercial trees are listed)

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
5C2, 5C3, 5D2, 5D3---------- Blair	4A	Slight	Slight	Slight	Slight	White oak----------	70	4	Shortleaf pine, eastern white pine, loblolly pine.
						Green ash----------	---	---	
						Bur oak----------	70	4	
						Northern red oak----	70	4	
8D2, 8D3---------- Hickory	5A	Slight	Slight	Slight	Slight	White oak----------	85	5	Sugar maple, black walnut, yellow-poplar, red pine, eastern white pine, white oak.
						Green ash----------	---	---	
						Northern red oak----	85	5	
						Black oak----------	---	---	
						Yellow-poplar-------	95	7	
						Bitternut hickory---	---	---	
8E, 8E2---------- Hickory	5R	Moderate	Moderate	Slight	Slight	White oak----------	85	5	Sugar maple, black walnut, yellow-poplar, red pine, eastern white pine, white oak.
						Green ash----------	---	---	
						Northern red oak----	85	5	
						Black oak----------	---	---	
						Yellow-poplar-------	95	7	
						Bitternut hickory---	---	---	
8G---------- Hickory	5R	Severe	Severe	Slight	Slight	White oak----------	85	5	Sugar maple, black walnut, yellow-poplar, red pine, eastern white pine, white oak.
						Green ash----------	---	---	
						Northern red oak----	85	5	
						Black oak----------	---	---	
						Yellow-poplar-------	95	7	
						Bitternut hickory---	---	---	
17A, 17B--------- Keomah	3A	Slight	Slight	Slight	Slight	White oak----------	65	3	Sugar maple, black walnut, red pine, eastern white pine, white oak, northern red oak.
						Northern red oak----	70	4	
19B2, 19C2, 19C3, 19D3---------- Sylvan	4A	Slight	Slight	Slight	Slight	White oak----------	80	4	Green ash, yellow-poplar, eastern white pine, Scotch pine, northern red oak.
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
						Northern red oak----	80	4	
30F---------- Hamburg	2R	Moderate	Moderate	Moderate	Slight	White oak----------	45	2	Eastern redcedar, white oak, bur oak.
						Black oak----------	---	---	
						Eastern redcedar----	---	---	
						Post oak----------	---	---	
						Bur oak----------	---	---	

See footnote at end of table.

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
30G---------- Hamburg	2R	Severe	Severe	Severe	Slight	White oak----------	45	2	Eastern redcedar, white oak, bur oak.
						Black oak----------	---	---	
						Eastern redcedar----	---	---	
						Post oak----------	---	---	
						Bur oak----------	---	---	
119D2, 119D3----- Elco	4A	Slight	Slight	Slight	Slight	White oak----------	80	4	White ash, green ash, black walnut, eastern white pine, white oak, northern red oak.
						Black walnut--------	---	---	
						Northern red oak----	---	---	
119E2---------- Elco	4R	Moderate	Moderate	Moderate	Slight	White oak----------	80	4	White ash, black walnut, eastern white pine, white oak, northern red oak.
						Black walnut--------	---	---	
						Northern red oak----	---	---	
242A---------- Kendall	4A	Slight	Slight	Slight	Slight	White oak----------	80	4	Green ash, black walnut, red pine, eastern white pine, white oak, northern red oak.
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
						Northern red oak----	80	4	
264D3---------- El Dara	4A	Slight	Slight	Slight	Slight	White oak----------	80	4	Green ash, black walnut, yellow-poplar, red pine, eastern white pine.
						Northern red oak----	80	4	
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
264E, 264E2------ El Dara	4R	Moderate	Moderate	Slight	Slight	White oak----------	80	4	Green ash, black walnut, yellow-poplar, red pine, eastern white pine.
						Northern red oak----	80	4	
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
264G---------- El Dara	4R	Severe	Severe	Slight	Slight	White oak----------	80	4	Green ash, black walnut, yellow-poplar, red pine, eastern white pine.
						Northern red oak----	80	4	
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
271C3, 271D3----- Timula	4A	Slight	Slight	Slight	Slight	White oak----------	70	4	Red pine, eastern white pine, Scotch pine, white oak.
						Bur oak----------	---	---	
						Northern red oak----	---	---	
						Green ash----------	---	---	

See footnote at end of table.

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
271E2--Timula	4R	Moderate	Moderate	Moderate	Slight	White oak Bur oak Northern red oak Green ash	70 --- --- ---	4 --- --- ---	Red pine, eastern white pine, Scotch pine, white oak.
274B, 274C2, 274C3, 274D2, 274D3--Seaton	6A	Slight	Slight	Slight	Slight	Yellow-poplar Black walnut White oak Northern red oak	90 --- 90 80	6 --- 5 4	Sugar maple, green ash, black walnut, red pine, white oak, northern red oak.
274E, 274E2--Seaton	6R	Moderate	Moderate	Moderate	Slight	Yellow-poplar Black walnut White oak Northern red oak	90 --- 90 80	6 --- 5 4	Sugar maple, green ash, black walnut, red pine, white oak, northern red oak.
274G--Seaton	6R	Severe	Severe	Severe	Slight	Yellow-poplar Black walnut White oak Northern red oak	90 --- 90 80	6 --- 5 4	Sugar maple, green ash, black walnut, red pine, white oak, northern red oak.
278A, 278B--Stronghurst	4A	Slight	Slight	Slight	Slight	White oak Green ash Bur oak Northern red oak	70 --- --- 70	4 --- --- 4	Eastern redcedar, red pine, eastern white pine, Scotch pine.
279B, 279C2, 279C3--Rozetta	4A	Slight	Slight	Slight	Slight	White oak Black walnut Yellow-poplar Northern red oak	80 --- 90 80	4 --- 6 4	Green ash, yellow-poplar, eastern white pine, Scotch pine, northern red oak.
280B, 280C2, 280C3, 280D2, 280D3--Fayette	4A	Slight	Slight	Slight	Slight	White oak Black walnut Yellow-poplar Northern red oak	80 --- 90 80	4 --- 6 4	Green ash, yellow-poplar, eastern white pine, northern red oak.
280E2--Fayette	4R	Moderate	Moderate	Slight	Slight	White oak Black walnut Yellow-poplar Northern red oak	80 --- 90 80	4 --- 6 4	Green ash, yellow-poplar, eastern white pine, northern red oak.

See footnote at end of table.

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
403G---------- Elizabeth	3R	Severe	Severe	Severe	Severe	Bur oak----------	60	3	Eastern redcedar, jack pine, red pine, eastern white pine.
						Shagbark hickory----	---	---	
						Northern red oak----	---	---	
						Black oak----------	60	3	
						Eastern redcedar----	---	---	
472D2---------- Baylis	4A	Slight	Slight	Slight	Slight	White oak----------	80	4	Green ash, black walnut, American sycamore, white oak, northern red oak.
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
						Northern red oak----	80	4	
472E2---------- Baylis	4R	Moderate	Moderate	Moderate	Slight	White oak----------	80	4	Green ash, black walnut, American sycamore, white oak, northern red oak.
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
						Northern red oak----	80	4	
551E2---------- Gosport	2R	Moderate	Moderate	Severe	Severe	White oak----------	45	2	Norway spruce, white spruce, red pine, eastern white pine, Scotch pine, cottonwood.
551G---------- Gosport	2R	Severe	Severe	Severe	Severe	White oak----------	45	2	Norway spruce, white spruce, red pine, eastern white pine, Scotch pine, cottonwood.
605D2, 605D3----- Ursa	4A	Slight	Slight	Slight	Slight	White oak----------	70	4	Red maple, green ash, eastern redcedar, Austrian pine, pin oak.
						Northern red oak----	70	4	
						Black oak----------	70	4	
						Green ash----------	---	---	
605E2---------- Ursa	4R	Moderate	Moderate	Moderate	Slight	White oak----------	70	4	Red maple, green ash, eastern redcedar, Austrian pine, pin oak.
						Northern red oak----	70	4	
						Black oak----------	70	4	
						Green ash----------	---	---	
606E---------- Goss	3R	Moderate	Moderate	Slight	Slight	White oak----------	60	3	Sweetgum, yellow-poplar, green ash.
						Shortleaf pine------	---	---	
						Black oak----------	---	---	
						Blackjack oak-------	---	---	
						Post oak----------	---	---	

See footnote at end of table.

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
606G---------- Goss	3R	Moderate	Severe	Slight	Slight	White oak----------	60	3	Sweetgum, yellow-poplar, green ash.
						Shortleaf pine------	---	---	
						Black oak----------	---	---	
						Blackjack oak-------	---	---	
						Post oak----------	---	---	
785G---------- Lacrescent	3R	Severe	Severe	Slight	Slight	White oak----------	55	3	Red pine, eastern white pine, white oak, northern red oak, American basswood.
						Northern red oak----	59	3	
						American basswood---	62	4	
937E:									
Seaton----------	6R	Moderate	Moderate	Moderate	Slight	Yellow-poplar-------	90	6	Sugar maple, green ash, black walnut, red pine, white oak, northern red oak.
						Black walnut--------	---	---	
						White oak----------	90	5	
						Northern red oak----	80	4	
Hickory---------	5R	Moderate	Moderate	Slight	Slight	White oak----------	85	5	Sugar maple, black walnut, yellow-poplar, red pine, eastern white pine, white oak.
						Green ash----------	---	---	
						Northern red oak----	85	5	
						Black oak----------	---	---	
						Yellow-poplar-------	95	7	
						Bitternut hickory---	---	---	
3070, 3070L------ Beaucoup	5W	Slight	Severe	Moderate	Moderate	Pin oak----------	90	5	Red maple, sweetgum, American sycamore, eastern cottonwood, pin oak.
						Sweetgum----------	---	---	
						American sycamore---	---	---	
						Eastern cottonwood--	100	9	
						Cherrybark oak------	---	---	
3071L---------- Darwin	5W	Slight	Severe	Moderate	Moderate	Pin oak----------	90	5	Red maple, sweetgum, American sycamore, eastern cottonwood, pin oak.
						Sweetgum----------	---	---	
						American sycamore---	---	---	
						Eastern cottonwood--	100	9	
						Cherrybark oak------	---	---	
3092L---------- Sarpy	3S	Slight	Slight	Severe	Slight	Silver maple--------	90	3	American sycamore, eastern cottonwood, black willow.
						Eastern cottonwood--	95	8	

See footnote at end of table.

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
3302---------- Ambraw	5W	Slight	Slight	Severe	Slight	Pin oak----------	90	5	Red maple, sweetgum, American sycamore, eastern cottonwood, pin oak.
						Sweetgum----------	---	---	
						American sycamore---	---	---	
						Eastern cottonwood--	100	9	
						Cherrybark oak------	---	---	
3331, 3331L------ Haymond	8A	Slight	Moderate	Slight	Slight	Yellow-poplar-------	100	8	Red maple, green ash, sweetgum, black cherry, swamp white oak, bur oak, pin oak.
3333, 3333L------ Wakeland	5A	Slight	Slight	Slight	Slight	Pin oak----------	90	5	Red maple, white ash, eastern white pine, American sycamore, baldcypress.
						Yellow-poplar-------	90	6	
						Virginia pine-------	85	9	
						Sweetgum----------	88	7	
3404, 3404L------ Titus	2W	Slight	Severe	Severe	Moderate	White ash----------	51	2	Red maple, silver maple, hackberry, green ash, water tupelo, American sycamore, eastern cottonwood, swamp white oak, pin oak.
						Silver maple--------	80	2	
						Eastern cottonwood--	99	9	
3415L---------- Orion	2W	Slight	Moderate	Slight	Slight	Silver maple--------	80	2	Silver maple, white ash, white spruce, eastern cottonwood.
						Red maple----------	---	---	
						White ash----------	---	---	
3428L---------- Coffeen	6W	Slight	Moderate	Slight	Slight	Yellow-poplar-------	90	6	Red maple, sweetgum, yellow-poplar, American sycamore, eastern cottonwood, pin oak.
						Eastern cottonwood--	100	---	
						Pin oak----------	90	5	
3475, 3475L------ Elsah	5F	Slight	Slight	Moderate	Slight	Sweetgum----------	76	5	Green ash, black walnut, sweetgum, yellow-poplar.
						American sycamore---	---	---	
						Eastern cottonwood--	95	8	
						Red maple----------	---	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

Table 8.--Windbreaks and Environmental Plantings

(Only the soils suitable for windbreaks and environmental plantings are listed. Dashes indicate that trees generally do not grow to the given height on that soil)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
5C2, 5C3, 5D2, 5D3---- Blair	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
8D2, 8D3, 8E, 8E2, 8G---- Hickory	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
17A, 17B---- Keomah	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
19B2, 19C2, 19C3, 19D3---- Sylvan	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
30F, 30G---- Hamburg	Washington hawthorn, Russian-olive, eastern redcedar, Osage-orange.	Northern catalpa, green ash, honeylocust, bur oak, black locust.	Siberian elm------	---
36B---- Tama	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
37B---- Worthen	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
43A, 43B---- Ipava	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
46---------- Herrick	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
50---------- Virden	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
61---------- Atterberry	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
75B, 75C---------- Drury	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine	Eastern white pine, pin oak.
119D2, 119D3, 119E2---------- Elco	Silky dogwood, Amur privet, honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
242A---------- Kendall	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
257A, 257B------- Clarksdale	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
264D3, 264E, 264E2, 264G----- El Dara	Washington hawthorn, Amur privet, Amur honeysuckle, American cranberrybush.	Eastern redcedar, Osage-orange, Austrian pine, northern whitecedar.	Norway spruce, red pine, eastern white pine.	---

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
271C3, 271D3, 271E2---------- Timula	Washington hawthorn, Russian-olive, eastern redcedar, Osage-orange.	Northern catalpa, green ash, honeylocust.	---	---
274B, 274C2, 274C3, 274D2, 274D3, 274E, 274E2, 274G----- Seaton	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
278A, 278B------- Stronghurst	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
279B, 279C2, 279C3---------- Rozetta	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
280B, 280C2, 280C3, 280D2, 280D3, 280E2---- Fayette	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
386B, 386C2------ Downs	Silky dogwood, autumn-olive, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
430B---------- Raddle	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
472D2, 472E2----- Baylis	Silky dogwood, Washington hawthorn, autumn-olive, eastern redcedar, Amur honeysuckle, radiant crabapple, lilac.	Jack pine, Austrian pine, red pine, eastern white pine.	---	---

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
551E2---------- Gosport	Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush.	Green ash, Osage-orange, Austrian pine.	Eastern white pine, pin oak.	---
605D2, 605D3, 605E2---------- Ursa	Silky dogwood, Washington hawthorn, eastern redcedar, Amur privet, Amur honeysuckle, arrowwood, American cranberrybush.	Green ash, Osage-orange, Austrian pine.	Eastern white pine, pin oak.	---
606E, 606G------- Goss	Autumn-olive------	Hackberry, Russian-olive, green ash, honeylocust, eastern redcedar, Austrian pine, bur oak.	Siberian elm------	---
815---------- Udorthents	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
937E: Seaton----------	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
Hickory---------	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern whitecedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
3028---------- Jules	Siberian peashrub	Washington hawthorn, green ash, eastern redcedar, Osage-orange, white spruce, northern whitecedar, nannyberry viburnum.	Black willow------	---

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
3070, 3070L------ Beaucoup	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
3071L---------- Darwin	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
3092, 3092L------ Sarpy	Siberian peashrub	Washington hawthorn, green ash, eastern redcedar, Osage-orange, white spruce, northern whitecedar, nannyberry viburnum.	Black willow------	Eastern cottonwood.
3302, 3302L------ Ambraw	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
3331, 3331L------ Haymond	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
3333, 3333L------ Wakeland	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
3404, 3404L------ Titus	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
3415, 3415L---- Orion	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce----	Eastern white pine, pin oak.
3428, 3428L---- Coffeen	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce----	Eastern white pine, pin oak.
3475, 3475L---- Elsah	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce----	Eastern white pine, pin oak.
4070---------- Beaucoup	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
7088---------- Sparta	Silky dogwood, Washington hawthorn, eastern redcedar, Amur honeysuckle, radiant crabapple, lilac.	Jack pine, Austrian pine, red pine.	Eastern white pine	---
8070---------- Beaucoup	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
8071---------- Darwin	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce, eastern white pine.	Pin oak.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
8092--Sarpy	Siberian peashrub	Washington hawthorn, green ash, eastern redcedar, Osage-orange, white spruce, northern whitecedar, nannyberry viburnum.	Black willow	European alder, eastern cottonwood.
8180--Dupo	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8183--Shaffton	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8217--Twomile	Possumhaw	Hackberry, eastern redcedar, northern whitecedar, nannyberry viburnum.	Pin oak, baldcypress.	Eastern cottonwood.
8284--Tice	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8288--Petrolia	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
8302--Ambraw	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
8331--Haymond	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8333--Wakeland	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8341--Ambraw	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
8395--Ceresco	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8404--Titus	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
8415--Orion	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8428--Coffeen	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.
8451--Lawson	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce	Eastern white pine, pin oak.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
8452---------- Riley	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
8789:				
Ambraw----------	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern whitecedar.	Eastern white pine	Pin oak.
Ceresco----------	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Austrian pine, blue spruce, northern whitecedar.	Norway spruce-----	Eastern white pine, pin oak.
Sarpy----------	Siberian peashrub	Washington hawthorn, green ash, eastern redcedar, Osage-orange, white spruce, northern whitecedar, nannyberry viburnum.	Black willow------	European alder, eastern cottonwood.

Table 9.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
5C2, 5C3--------- Blair	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
5D2, 5D3--------- Blair	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
8D2, 8D3--------- Hickory	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
8E, 8E2---------- Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
8G--------------- Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
17A-------------- Keomah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight----------	Slight.
17B-------------- Keomah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight----------	Slight.
19B2------------- Sylvan	Slight----------	Slight----------	Moderate: slope.	Severe: erodes easily.	Slight.
19C2, 19C3------- Sylvan	Slight----------	Slight----------	Severe: slope.	Severe: erodes easily.	Slight.
19D3------------- Sylvan	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
30F, 30G--------- Hamburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
36B-------------- Tama	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
37B-------------- Worthen	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
43A, 43B--------- Ipava	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
46--------------- Herrick	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
50--------------- Virden	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

Table 9.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
61--Atterberry	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
75B, 75C--Drury	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
119D2, 119D3--Elco	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
119E2--Elco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
242A--Kendall	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
257A, 257B--Clarksdale	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
264D3--El Dara	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
264E, 264E2--El Dara	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
264G--El Dara	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
271C3--Timula	Slight	Slight	Severe: slope.	Severe: erodes easily.	Slight.
271D3--Timula	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
271E2--Timula	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
274B--Seaton	Slight	Slight	Moderate: slope.	Slight	Slight.
274C2, 274C3--Seaton	Slight	Slight	Severe: slope.	Slight	Slight.
274D2, 274D3--Seaton	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
274E, 274E2--Seaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
274G--Seaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
278A, 278B--Stronghurst	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
279B--Rozetta	Slight	Slight	Moderate: slope.	Slight	Slight.
279C2, 279C3--Rozetta	Slight	Slight	Severe: slope.	Slight	Slight.

Table 9.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
280B---------- Fayette	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
280C2, 280C3----- Fayette	Slight----------	Slight----------	Severe: slope.	Severe: erodes easily.	Slight.
280D2, 280D3----- Fayette	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
280E2---------- Fayette	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
386B---------- Downs	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
386C2---------- Downs	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
403G---------- Elizabeth	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.	Severe: large stones, slope.
430B---------- Raddle	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
472D2---------- Baylis	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
472E2---------- Baylis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
551E2---------- Gosport	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Severe: slope.
551G---------- Gosport	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, erodes easily.	Severe: slope.
605D2, 605D3----- Ursa	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
605E2---------- Ursa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
606E---------- Goss	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
606G---------- Goss	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty.
785G---------- Lacrescent	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
815---------- Udorthents	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Severe: erodes easily.	Slight.
937E:					
Seaton----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Hickory----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.

Table 9.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
3028--Jules	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3070, 3070L--Beaucoup	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3071L--Darwin	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3092, 3092L--Sarpy	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3302--Ambraw	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
3302L--Ambraw	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3331, 3331L--Haymond	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3333, 3333L--Wakeland	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
3404, 3404L--Titus	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3415, 3415L--Orion	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
3428, 3428L--Coffeen	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
3475, 3475L--Elsah	Severe: flooding.	Moderate: flooding, small stones.	Severe: small stones, flooding.	Moderate: flooding.	Severe: flooding.
4070--Beaucoup	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
7088--Sparta	Severe: flooding.	Moderate: too sandy.	Moderate: small stones, too sandy.	Moderate: too sandy.	Moderate: droughty.
8070--Beaucoup	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
8071--Darwin	Severe: flooding, ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.

Table 9.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
8092--- Sarpy	Severe: flooding.	Slight---	Moderate: flooding.	Slight---	Moderate: droughty, flooding.
8180--- Dupo	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, flooding, percs slowly.	Moderate: wetness.	Moderate: wetness, flooding.
8183--- Shaffton	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight---	Moderate: flooding.
8217--- Twomile	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8284--- Tice	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
8288--- Petrolia	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
8302--- Ambraw	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
8331--- Haymond	Severe: flooding.	Slight---	Moderate: flooding.	Slight---	Moderate: flooding.
8333--- Wakeland	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8341--- Ambraw	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
8395--- Ceresco	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8396--- Vesser	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8404--- Titus	Severe: flooding, ponding, too clayey.	Severe: ponding, too clayey.	Severe: too clayey, ponding.	Severe: ponding, too clayey.	Severe: ponding, too clayey.
8415--- Orion	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8428--- Coffeen	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8451--- Lawson	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.

Table 9.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
8452---------- Riley	Severe: flooding.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
8789:					
Ambraw----------	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ceresco----------	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
Sarpy----------	Severe: flooding.	Slight----------	Moderate: flooding.	Slight----------	Moderate: droughty, flooding.

Table 10.--Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor")

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	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
5C2, 5C3, 5D2, 5D3---------- Blair	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8D2, 8D3--------- Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
8E, 8E2---------- Hickory	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
8G---------- Hickory	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
17A, 17B--------- Keomah	Good	Good	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair.
19B2---------- Sylvan	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
19C2, 19C3, 19D3- Sylvan	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
30F, 30G--------- Hamburg	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
36B---------- Tama	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
37B---------- Worthen	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
43A---------- Ipava	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
43B---------- Ipava	Good	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
46---------- Herrick	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
50---------- Virden	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
61---------- Atterberry	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
75B---------- Drury	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
75C---------- Drury	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
119D2, 119D3----- Elco	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
119E2---------- Elco	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 10.--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	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
242A---------- Kendall	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
257A---------- Clarksdale	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
257B---------- Clarksdale	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
264D3---------- El Dara	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
264E, 264E2, 264G El Dara	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
271C3, 271D3----- Timula	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
271E2---------- Timula	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
274B, 274C2, 274C3, 274D2, 274D3---------- Seaton	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
274E---------- Seaton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
274E2, 274G------ Seaton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
278A---------- Stronghurst	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
278B---------- Stronghurst	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
279B---------- Rozetta	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
279C2, 279C3----- Rozetta	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
280B---------- Fayette	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
280C2, 280C3, 280D2, 280D3---- Fayette	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
280E2---------- Fayette	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
386B---------- Downs	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
386C2---------- Downs	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
403G---------- Elizabeth	Very poor.	Very poor.	Poor	Poor	Fair	Very poor.	Very poor.	Very poor.	Poor	Very poor.

Table 10.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
430B---------- Raddle	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
472D2, 472E2----- Baylis	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
551E2, 551G------ Gosport	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
605D2, 605D3----- Ursa	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
605E2---------- Ursa	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
606E---------- Goss	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
606G---------- Goss	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
785G---------- Lacrescent	Poor	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
815---------- Udorthents	Good	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
937E:										
Seaton----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Hickory---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
3028---------- Jules	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
3070, 3070L------ Beaucoup	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3071L---------- Darwin	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3092, 3092L------ Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
3302, 3302L------ Ambraw	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Fair	Good.
3331, 3331L------ Haymond	Good	Good	Fair	Good	Good	Poor	Poor	Good	Good	Poor.
3333, 3333L------ Wakeland	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
3404---------- Titus	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3404L---------- Titus	Very poor.	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.

Table 10.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
3415, 3415L---- Orion	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Good.
3428, 3428L---- Coffeen	Fair	Fair	Fair	Good	Poor	Fair	Poor	Fair	Good	Poor.
3475, 3475L---- Elsah	Fair	Fair	Fair	Good	Fair	Poor	Poor	Fair	Good	Poor.
4070---- Beaucoup	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
7088---- Sparta	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
8070---- Beaucoup	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
8071---- Darwin	Poor	Poor	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.
8092---- Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
8180---- Dupo	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8183---- Shaffton	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good.
8217---- Twomile	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
8284---- Tice	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
8288---- Petrolia	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
8302---- Ambraw	Good	Fair	Good	Good	Fair	Good	Good	Good	Good	Good.
8331---- Haymond	Good	Good	Fair	Good	Good	Poor	Poor	Good	Good	Poor.
8333---- Wakeland	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8341---- Ambraw	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Fair	Good.
8395---- Ceresco	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8396---- Vesser	Good	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
8404---- Titus	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
8415---- Orion	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Good.

Table 10.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
8428--Coffeen	Fair	Fair	Fair	Good	Poor	Fair	Poor	Fair	Good	Poor.
8451--Lawson	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8452--Riley	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8789:										
Ambraw	Good	Fair	Good	Good	Fair	Good	Good	Good	Good	Good.
Ceresco	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

Table 11.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
5C2, 5C3--------- Blair	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate: wetness.
5D2, 5D3--------- Blair	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: wetness, slope.
8D2, 8D3--------- Hickory	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
8E, 8E2---------- Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
8G--------------- Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
17A, 17B--------- Keomah	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength, frost action.	Slight.
19B2------------- Sylvan	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Severe: low strength, frost action.	Slight.
19C2, 19C3------- Sylvan	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Severe: low strength, frost action.	Slight.
19D3------------- Sylvan	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
30F, 30G--------- Hamburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
36B-------------- Tama	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
37B-------------- Worthen	Slight---------	Slight---------	Slight---------	Slight---------	Severe: low strength, frost action.	Slight.
43A, 43B--------- Ipava	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.

Table 11.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
46--- Herrick	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
50--- Virden	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
61--- Atterberry	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Moderate: wetness.
75B--- Drury	Slight---	Slight---	Slight---	Slight---	Severe: low strength, frost action.	Slight.
75C--- Drury	Slight---	Slight---	Slight---	Moderate: slope.	Severe: low strength, frost action.	Slight.
119D2, 119D3--- Elco	Moderate: too clayey, wetness, slope.	Moderate: shrink-swell, slope.	Moderate: wetness, slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
119E2--- Elco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
242A--- Kendall	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
257A, 257B--- Clarksdale	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
264D3--- El Dara	Severe: cutbanks cave.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
264E, 264E2, 264G El Dara	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
271C3--- Timula	Moderate: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Severe: frost action.	Slight.
271D3--- Timula	Moderate: cutbanks cave, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: frost action.	Moderate: slope.
271E2--- Timula	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
274B--- Seaton	Slight---	Slight---	Slight---	Slight---	Severe: low strength, frost action.	Slight.

Table 11.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
274C2, 274C3----- Seaton	Slight---------	Slight---------	Slight---------	Moderate: slope.	Severe: low strength, frost action.	Slight.
274D2, 274D3----- Seaton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
274E, 274E2, 274G Seaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
278A, 278B------- Stronghurst	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
279B---------- Rozetta	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
279C2, 279C3----- Rozetta	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
280B---------- Fayette	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
280C2, 280C3----- Fayette	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
280D2, 280D3----- Fayette	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
280E2---------- Fayette	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
386B---------- Downs	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
386C2---------- Downs	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
403G---------- Elizabeth	Severe: depth to rock, large stones.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, low strength, slope.	Severe: large stones, slope.
430B---------- Raddle	Slight---------	Slight---------	Slight---------	Slight---------	Severe: frost action.	Slight.
472D2---------- Baylis	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: frost action.	Moderate: slope.

Table 11.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
472E2---------- Baylis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
551E2---------- Gosport	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
551G---------- Gosport	Severe: wetness, slope.	Severe: shrink-swell, slope.	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
605D2, 605D3----- Ursa	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
605E2---------- Ursa	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
606E, 606G------- Goss	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty.
785G---------- Lacrescent	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
815---------- Udorthents	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
937E:						
Seaton----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Hickory---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
3028---------- Jules	Moderate: cutbanks cave, wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
3070, 3070L------ Beaucoup	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3071L---------- Darwin	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3092, 3092L------ Sarpy	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.

Table 11.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
3302--Ambraw	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
3302L--Ambraw	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3331, 3331L--Haymond	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
3333, 3333L--Wakeland	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: flooding.
3404, 3404L--Titus	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding, flooding.
3415, 3415L--Orion	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding, frost action.	Severe: flooding.
3428, 3428L--Coffeen	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: flooding.
3475, 3475L--Elsah	Moderate: large stones, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
4070--Beaucoup	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.
7088--Sparta	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
8070--Beaucoup	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.
8071--Darwin	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
8092--Sarpy	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
8180--Dupo	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness, shrink-swell.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.

Table 11.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
8183--- Shaffton	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
8217--- Twomile	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.
8284--- Tice	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.
8288--- Petrolia	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.
8302--- Ambraw	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
8331--- Haymond	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
8333--- Wakeland	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.
8341--- Ambraw	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness.
8395--- Ceresco	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.
8396--- Vesser	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.
8404--- Titus	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding, too clayey.
8415--- Orion	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.
8428--- Coffeen	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.
8451--- Lawson	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.

Table 11.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
8452---------- Riley	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.
8789:						
Ambraw----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
Ceresco----------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.
Sarpy----------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.

Table 12.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
5C2, 5C3--------- Blair	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
5D2, 5D3--------- Blair	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, slope, wetness.
8D2, 8D3--------- Hickory	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.
8E, 8E2, 8G------ Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
17A, 17B--------- Keomah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
19B2------------- Sylvan	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Good.
19C2, 19C3------- Sylvan	Moderate: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness.	Good.
19D3------------- Sylvan	Moderate: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: slope.
30F, 30G--------- Hamburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
36B-------------- Tama	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
37B-------------- Worthen	Slight----------	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
43A, 43B--------- Ipava	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
46--------------- Herrick	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.

Table 12.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
50--Virden	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
61--Atterberry	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: hard to pack.
75B--Drury	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
75C--Drury	Moderate: percs slowly.	Severe: slope.	Slight	Slight	Good.
119D2, 119D3--Elco	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, slope, too clayey.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
119E2--Elco	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
242A--Kendall	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
257A, 257B--Clarksdale	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
264D3--El Dara	Moderate: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, thin layer.
264E, 264E2, 264G--El Dara	Severe: slope.	Severe: slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, slope.
271C3--Timula	Moderate: percs slowly.	Severe: slope.	Slight	Slight	Good.
271D3--Timula	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
271E2--Timula	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
274B--Seaton	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
274C2, 274C3--Seaton	Slight	Severe: slope.	Slight	Slight	Good.
274D2, 274D3--Seaton	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.

Table 12.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
274E, 274E2, 274G Seaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
278A, 278B------- Stronghurst	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
279B---------- Rozetta	Moderate: wetness.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
279C2, 279C3----- Rozetta	Moderate: wetness.	Severe: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
280B---------- Fayette	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Fair: too clayey.
280C2, 280C3----- Fayette	Moderate: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight----------	Fair: too clayey.
280D2, 280D3----- Fayette	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
280E2---------- Fayette	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
386B---------- Downs	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
386C2---------- Downs	Moderate: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
403G---------- Elizabeth	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
430B---------- Raddle	Moderate: percs slowly.	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
472D2---------- Baylis	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, small stones.
472E2---------- Baylis	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, small stones, slope.
551E2, 551G------ Gosport	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.

Table 12.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
605D2, 605D3----- Ursa	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
605E2---------- Ursa	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
606E, 606G------- Goss	Severe: slope.	Severe: seepage, slope.	Severe: slope, too clayey, large stones.	Severe: slope.	Poor: too clayey, small stones, slope.
785G---------- Lacrescent	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: large stones, slope.
815---------- Udorthents	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Slight----------	Fair: wetness.
937E:					
Seaton----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Hickory---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
3028---------- Jules	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Good.
3070, 3070L------ Beaucoup	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3071L---------- Darwin	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3092, 3092L------ Sarpy	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.
3302---------- Ambraw	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
3302L---------- Ambraw	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, ponding.	Poor: too sandy, ponding.
3331, 3331L------ Haymond	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Good.

Table 12.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
3333, 3333L------ Wakeland	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3404, 3404L------ Titus	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
3415, 3415L------ Orion	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3428, 3428L------ Coffeen	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
3475, 3475L------ Elsah	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, large stones.	Severe: flooding, seepage.	Poor: small stones.
4070---------- Beaucoup	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
7088---------- Sparta	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
8070---------- Beaucoup	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
8071---------- Darwin	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
8092---------- Sarpy	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.
8180---------- Dupo	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
8183---------- Shaffton	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
8217---------- Twomile	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

Table 12.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
8284--Tice	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack.
8288--Petrolia	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
8302--Ambraw	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
8331--Haymond	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Good.
8333--Wakeland	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
8341--Ambraw	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
8395--Ceresco	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
8396--Vesser	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
8404--Titus	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
8415--Orion	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
8428--Coffeen	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
8451--Lawson	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
8452--Riley	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy.

Table 12.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
8789:					
Ambraw	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Ceresco	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
Sarpy	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.

Table 13.--Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
5C2, 5C3--------- Blair	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
5D2, 5D3--------- Blair	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
8D2, 8D3--------- Hickory	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
8E, 8E2---------- Hickory	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
8G--------------- Hickory	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
17A, 17B--------- Keomah	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
19B2, 19C2, 19C3- Sylvan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
19D3------------- Sylvan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
30F, 30G--------- Hamburg	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
36B-------------- Tama	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
37B-------------- Worthen	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
43A, 43B--------- Ipava	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
46--------------- Herrick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
50--------------- Virden	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
61--------------- Atterberry	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
75B, 75C--------- Drury	Good----------	Improbable: excess fines.	Improbable: excess fines.	Good.
119D2, 119D3----- Elco	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.

Table 13.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
119E2--- Elco	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
242A--- Kendall	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
257A, 257B--- Clarksdale	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
264D3--- El Dara	Good---	Probable---	Improbable: too sandy.	Fair: too clayey, slope.
264E, 264E2--- El Dara	Fair: slope.	Probable---	Improbable: too sandy.	Poor: slope.
264G--- El Dara	Poor: slope.	Probable---	Improbable: too sandy.	Poor: slope.
271C3--- Timula	Good---	Improbable: excess fines.	Improbable: excess fines.	Good.
271D3--- Timula	Good---	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
271E2--- Timula	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
274B, 274C2, 274C3--- Seaton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
274D2, 274D3--- Seaton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
274E, 274E2--- Seaton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
274G--- Seaton	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
278A, 278B--- Stronghurst	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
279B, 279C2, 279C3--- Rozetta	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
280B, 280C2, 280C3--- Fayette	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
280D2, 280D3--- Fayette	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
280E2--- Fayette	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
386B, 386C2--- Downs	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

Table 13.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
403G---------- Elizabeth	Poor: depth to rock, low strength, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, large stones, slope.
430B---------- Raddle	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
472D2---------- Baylis	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
472E2---------- Baylis	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
551E2---------- Gosport	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
551G---------- Gosport	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
605D2, 605D3----- Ursa	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
605E2---------- Ursa	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
606E---------- Goss	Fair: shrink-swell, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
606G---------- Goss	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
785G---------- Lacrescent	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
815---------- Udorthents	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
937E:				
Seaton----------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Hickory---------	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
3028---------- Jules	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
3070, 3070L------ Beaucoup	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

Table 13.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
3071L---------- Darwin	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3092, 3092L------ Sarpy	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
3302---------- Ambraw	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: wetness.
3302L---------- Ambraw	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
3331, 3331L------ Haymond	Good----------	Improbable: excess fines.	Improbable: excess fines.	Good.
3333, 3333L------ Wakeland	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
3404, 3404L------ Titus	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
3415, 3415L------ Orion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
3428, 3428L------ Coffeen	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
3475, 3475L------ Elsah	Fair: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim.
4070---------- Beaucoup	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
7088---------- Sparta	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
8070---------- Beaucoup	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
8071---------- Darwin	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
8092---------- Sarpy	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
8180---------- Dupo	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
8183---------- Shaffton	Fair: wetness.	Probable----------	Improbable: too sandy.	Good.
8217---------- Twomile	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

Table 13.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
8284--- Tice	Fair: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
8288--- Petrolia	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
8302--- Ambraw	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
8331--- Haymond	Good---	Improbable: excess fines.	Improbable: excess fines.	Good.
8333--- Wakeland	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
8341--- Ambraw	Poor: wetness.	Probable---	Improbable: too sandy.	Poor: wetness.
8395--- Ceresco	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
8396--- Vesser	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
8404--- Titus	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
8415--- Orion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
8428--- Coffeen	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
8451--- Lawson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
8452--- Riley	Fair: wetness.	Probable---	Improbable: too sandy.	Fair: thin layer.
8789:				
Ambraw---	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
Ceresco---	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Sarpy---	Good---	Probable---	Improbable: too sandy.	Poor: too sandy.

Table 14.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
5C2, 5C3--------- Blair	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
5D2, 5D3--------- Blair	Severe: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Slope, erodes easily, wetness.	Slope, erodes easily.
8D2, 8D3, 8E, 8E2, 8G--------- Hickory	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
17A-------------- Keomah	Slight---------	Moderate: wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
17B-------------- Keomah	Moderate: slope.	Moderate: wetness.	Severe: slow refill.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
19B2, 19C2, 19C3- Sylvan	Moderate: seepage, slope.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
19D3-------------- Sylvan	Severe: slope.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
30F, 30G--------- Hamburg	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
36B-------------- Tama	Moderate: seepage, slope.	Slight---------	Moderate: deep to water, slow refill.	Deep to water	Slope----------	Erodes easily	Erodes easily.
37B-------------- Worthen	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Favorable------	Erodes easily	Erodes easily.
43A-------------- Ipava	Slight---------	Severe: wetness.	Severe: slow refill.	Frost action---	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
43B-------------- Ipava	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness.	Erodes easily, wetness.	Wetness, erodes easily.

Table 14.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
46--- Herrick	Slight	Severe: wetness.	Severe: slow refill.	Frost action	Wetness	Erodes easily, wetness.	Erodes easily.
50--- Virden	Slight	Severe: ponding.	Severe: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness
61--- Atterberry	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action	Wetness	Erodes easily, wetness.	Erodes easily.
75B, 75C--- Drury	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
119D2, 119D3--- Elco	Severe: slope.	Moderate: piping, wetness.	Severe: no water.	Frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily.
119E2--- Elco	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
242A--- Kendall	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
257A--- Clarksdale	Slight	Severe: wetness.	Severe: slow refill.	Frost action	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
257B--- Clarksdale	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
264D3--- El Dara	Severe: slope.	Moderate: thin layer, piping.	Severe: cutbanks cave.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
264E, 264E2, 264G--- El Dara	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, soil blowing, rooting depth.	Slope, too sandy, soil blowing.	Slope, rooting depth.
271C3--- Timula	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
271D3, 271E2--- Timula	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.

Table 14.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
274B, 274C2, 274C3---------- Seaton	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
274D2, 274D3, 274E, 274E2, 274G---------- Seaton	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
278A---------- Stronghurst	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
278B---------- Stronghurst	Moderate: seepage, slope.	Severe: wetness.	Moderate: slow refill.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
279B---------- Rozetta	Moderate: seepage, slope.	Slight---------	Moderate: deep to water, slow refill.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
279C2, 279C3----- Rozetta	Moderate: seepage, slope.	Slight---------	Moderate: deep to water, slow refill.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
280B---------- Fayette	Moderate: seepage, slope.	Slight---------	Severe: no water.	Deep to water	Slope----------	Erodes easily	Erodes easily.
280C2, 280C3----- Fayette	Moderate: seepage, slope.	Slight---------	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
280D2, 280D3, 280E2---------- Fayette	Severe: slope.	Slight---------	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
386B, 386C2------ Downs	Moderate: seepage, slope.	Slight---------	Moderate: deep to water, slow refill.	Deep to water	Slope----------	Erodes easily	Erodes easily.
403G---------- Elizabeth	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
430B---------- Raddle	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope----------	Erodes easily	Erodes easily.

Table 14.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
472D2, 472E2----- Baylis	Severe: slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
551E2---------- Gosport	Severe: slope.	Slight---------	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
551G---------- Gosport	Severe: slope.	Slight---------	Severe: no water.	Percs slowly, depth to rock, slope.	Slope, wetness, percs slowly.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
605D2, 605D3, 605E2---------- Ursa	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, erodes easily, percs slowly.	Slope, erodes easily.
606E, 606G------- Goss	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope.
785G---------- Lacrescent	Severe: seepage, slope.	Severe: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
815---------- Udorthents	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
937E:							
Seaton----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Hickory---------	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
3028---------- Jules	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
3070, 3070L------ Beaucoup	Slight---------	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding--------	Wetness.
3071L---------- Darwin	Slight---------	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding--------	Wetness.

Table 14.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
3092, 3092L--- Sarpy	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
3302--- Ambraw	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness, flooding.	Wetness---	Wetness.
3302L--- Ambraw	Slight---	Severe: piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, flooding, frost action.	Ponding, flooding.	Erodes easily, ponding, too sandy.	Wetness, erodes easily.
3331, 3331L--- Haymond	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
3333, 3333L--- Wakeland	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
3404, 3404L--- Titus	Slight---	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, rooting depth, percs slowly.
3415, 3415L--- Orion	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness---	Erodes easily, wetness.	Wetness, erodes easily.
3428, 3428L--- Coffeen	Severe: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Wetness---	Wetness.
3475, 3475L--- Elsah	Severe: seepage.	Severe: piping, large stones.	Severe: no water.	Deep to water	Large stones, droughty.	Large stones---	Large stones, droughty, rooting depth.
4070--- Beaucoup	Slight---	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding---	Wetness.
7088--- Sparta	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
8070--- Beaucoup	Slight---	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding---	Wetness.

Table 14.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
8071--Darwin	Slight	Severe: hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
8092--Sarpy	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
8180--Dupo	Moderate: seepage.	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
8183--Shaffton	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Flooding	Wetness, flooding.	Erodes easily, wetness.	Erodes easily.
8217--Twomile	Moderate: seepage.	Moderate: wetness.	Severe: no water.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
8284--Tice	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness	Wetness	Favorable.
8288--Petrolia	Slight	Severe: ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding	Wetness.
8302--Ambraw	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
8331--Haymond	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
8333--Wakeland	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
8341--Ambraw	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness, flooding.	Wetness	Wetness.
8395--Ceresco	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness	Wetness	Wetness.
8396--Vesser	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Wetness, erodes easily.

Table 14.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
8404---------- Titus	Slight---------	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, rooting depth, percs slowly.
8415---------- Orion	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
8428---------- Coffeen	Severe: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Wetness--------	Wetness.
8451---------- Lawson	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
8452---------- Riley	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness--------	Wetness, too sandy.	Favorable.
8789:							
Ambraw----------	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
Ceresco---------	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness--------	Wetness--------	Wetness.
Sarpy----------	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.

Table 15.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
5C2----------	0-5	Silt loam	CL-ML, CL	A-4, A-6	0	0-2	95-100	90-100	90-100	85-95	20-35	5-15
Blair	5-48	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	90-100	80-100	30-50	15-30
	48-60	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-95	30-50	15-30
5C3----------	0-5	Silty clay loam	CL	A-6	0	0-5	95-100	90-100	90-100	85-100	25-40	10-20
Blair	5-43	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	90-100	80-100	30-50	15-30
	43-60	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-95	30-50	15-30
5D2----------	0-6	Silt loam------	CL-ML, CL	A-4, A-6	0	0-2	95-100	90-100	90-100	85-95	20-35	5-15
Blair	6-34	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	90-100	80-100	30-50	15-30
	34-60	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-95	30-50	15-30
5D3----------	0-5	Silty clay loam	CL	A-6	0	0-5	95-100	90-100	90-100	85-100	25-40	10-20
Blair	5-43	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	90-100	80-100	30-50	15-30
	43-60	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	70-95	30-50	15-30
8D2----------	0-6	Silt loam------	CL	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	8-15
Hickory	6-60	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
8D3---	0-6	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	80-95	70-85	30-50	15-30
Hickory	6-60	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
8E---	0-7	Loam---	CL, ML, CL-ML	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	3-15
Hickory	7-23	Clay loam, loam	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
	23-60	Clay loam, loam, gravelly clay loam.	CL-ML, CL	A-4, A-6	0-1	0-5	85-100	75-95	70-95	60-80	20-40	5-20
8E2---	0-5	Silt loam---	CL	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	8-15
Hickory	5-24	Loam, silt loam, clay loam.	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
	24-60	Loam, clay loam, gravelly clay loam.	CL-ML, CL	A-4, A-6	0-1	0-5	85-100	75-95	70-95	60-80	20-40	5-20
8G---	0-7	Silt loam---	CL, ML, CL-ML	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	3-15
Hickory	7-23	Loam, silt loam	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
	23-60	Clay loam, loam, gravelly clay loam.	CL-ML, CL	A-4, A-6	0-1	0-5	85-100	75-95	70-95	60-80	20-40	5-20
17A---	0-8	Silt loam---	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
Keomah	8-10	Silt loam---	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	4-15
	10-46	Silty clay, silty clay loam.	CH	A-7	0	0	100	100	100	95-100	45-60	30-45
	46-60	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-30
17B---	0-10	Silt loam---	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
Keomah	10-32	Silty clay, silty clay loam.	CH	A-7	0	0	100	100	100	95-100	45-60	30-45
	32-60	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	95-100	35-60	15-30

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
19B2----------	0-7	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
Sylvan	7-47	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
	47-60	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-40	5-20
19C2----------	0-9	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
Sylvan	9-27	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
	27-60	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-40	5-20
19C3----------	0-7	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	20-30
Sylvan	7-25	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
	25-60	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-40	5-20
19D3----------	0-5	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	20-30
Sylvan	5-30	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
	30-60	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-40	5-20
30F----------	0-5	Silt----------	CL-ML, ML	A-4	0	0	100	100	100	95-100	0-25	NP-5
Hamburg	5-60	Silt loam, silt	CL-ML, ML	A-4	0	0	100	100	100	95-100	0-25	NP-5
30G----------	0-4	Silt----------	CL-ML, ML	A-4	0	0	100	100	100	95-100	0-25	NP-5
Hamburg	4-60	Silt loam, silt	CL-ML, ML	A-4	0	0	100	100	100	95-100	0-25	NP-5
36B----------	0-21	Silt loam------	ML, CL	A-6, A-7	0	0	100	100	100	95-100	35-45	10-20
Tama	21-41	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	41-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
37B----------	0-22	Silt loam------	CL	A-4, A-6	0	0	100	100	95-100	80-100	25-40	7-21
Worthen	22-60	Silt loam------	CL	A-4, A-6	0	0	100	100	95-100	80-100	25-40	7-21
43A----------	0-20	Silt loam------	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
Ipava	20-56	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	45-70	25-40
	56-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-40	5-20

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
43B----------	0-8	Silt loam------	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
Ipava	8-56	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	45-70	25-40
	56-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-40	5-20
46----------	0-18	Silt loam------	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
Herrick	18-53	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	25-40
	53-60	Silt loam, loam, clay loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
50----------	0-14	Silt loam------	CL	A-7, A-6	0	0	100	100	95-100	95-100	30-45	10-20
Virden	14-36	Silty clay, silty clay loam.	CH, CL	A-7-6	0	0	100	100	95-100	95-100	40-55	15-30
	36-60	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	30-45	10-20
61----------	0-8	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
Atterberry	8-14	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	14-49	Silt loam, silty clay loam.	CL, CH	A-6, A-7	0	0	100	100	95-100	95-100	35-55	15-30
	49-60	Silt loam, loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
75B----------	0-16	Silt loam------	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	95-100	90-100	20-35	NP-15
Drury	16-45	Silt loam------	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-35	8-15
	45-60	Silt loam, loam, very fine sandy loam.	CL-ML, CL	A-4, A-6	0	0	100	95-100	95-100	55-95	20-30	5-15
75C----------	0-17	Silt loam------	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	95-100	90-100	20-35	NP-15
Drury	17-45	Silt loam------	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-35	8-15
	45-60	Silt loam, loam, very fine sandy loam.	CL-ML, CL	A-4, A-6	0	0	100	95-100	95-100	55-95	20-30	5-15

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
119D2----------	0-5	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
Elco	5-45	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	85-100	25-45	10-30
	45-60	Silty clay loam, clay loam, silt loam.	CL	A-7, A-6	0	0	100	90-100	85-95	75-95	25-45	10-30
119D3----------	0-5	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	30-45	15-30
Elco	5-43	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	85-100	25-45	10-30
	43-60	Silty clay loam, clay loam, silt loam.	CL	A-7, A-6	0	0	100	90-100	85-95	75-95	25-45	10-30
119E2----------	0-6	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
Elco	6-33	Silt loam, silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-30
	33-60	Silt loam, loam, silty clay loam.	CL	A-7, A-6	0	0	95-100	90-100	85-95	75-95	25-45	10-30
242A----------	0-16	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	20-35	5-15
Kendall	16-60	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
257A----------	0-9	Silt loam------	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
Clarksdale	9-12	Silt loam------	CL	A-6, A-4	0	0	100	100	95-100	90-100	20-35	8-18
	12-45	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-65	25-40
	45-60	Silt loam, silty clay loam.	CL	A-6	0	0	95-100	95-100	95-100	90-100	25-40	10-25
257B----------	0-9	Silt loam------	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
Clarksdale	9-43	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-65	25-40
	43-60	Silt loam, silty clay loam.	CL	A-6	0	0	95-100	95-100	95-100	90-100	25-40	10-25

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
264D3---------- El Dara	0-8	Sandy loam-----	CL, SM, SC, ML	A-4	0	0	100	100	95-100	35-55	15-25	NP-10
	8-60	Sandy clay loam, clay loam, loam.	SC, CL	A-6, A-2-6	0	0	95-100	95-100	90-100	30-60	20-35	10-20
264E---------- El Dara	0-3	Fine sandy loam	SM, SC, ML, CL	A-4	0	0	100	100	95-100	35-55	0-25	NP-10
	3-14	Fine sandy loam, loam, silt loam.	SM, SC, SC-SM	A-4, A-2	0	0	100	95-100	95-100	30-50	0-20	NP-10
	14-42	Sandy clay loam, clay loam, sandy loam.	SC, CL	A-6, A-2-6	0	0	95-100	95-100	95-100	30-60	20-35	10-20
	42-60	Sandy loam, loamy sand, sand.	SM, SC-SM, SC, SP-SM	A-2	0	0	100	95-100	95-100	10-30	0-20	NP-10
264E2---------- El Dara	0-4	Fine sandy loam	SM, SC, ML, CL	A-4	0	0	100	100	95-100	35-55	0-25	NP-10
	4-10	Fine sandy loam, loam, silt loam.	SM, SC, SC-SM	A-4, A-2	0	0	100	95-100	95-100	30-50	0-20	NP-10
	10-60	Sandy clay loam, clay loam, fine sandy loam.	SC, CL	A-6, A-2-6	0	0	95-100	95-100	95-100	30-60	20-35	10-20
264G---------- El Dara	0-3	Fine sandy loam	SM, SC, ML, CL	A-4	0	0	100	100	95-100	35-55	0-25	NP-10
	3-14	Fine sandy loam, loam, silt loam.	SM, SC, SC-SM	A-4, A-2	0	0	100	95-100	95-100	30-50	0-20	NP-10
	14-42	Sandy clay loam, clay loam, sandy loam.	SC, CL	A-6, A-2-6	0	0	95-100	95-100	95-100	30-60	20-35	10-20
	42-60	Sandy loam, loamy sand, sand.	SM, SC-SM, SC, SP-SM	A-2	0	0	100	95-100	95-100	10-30	0-20	NP-10
271C3, 271D3----- Timula	0-7	Silt loam------	ML	A-4	0	0	100	100	95-100	85-100	25-35	NP-10
	7-60	Silt loam, silt	ML	A-4	0	0	100	100	95-100	85-100	25-35	NP-10
271E2---------- Timula	0-8	Silt loam------	ML	A-4	0	0	100	100	95-100	85-100	25-35	NP-10
	8-60	Silt loam, silt	ML	A-4	0	0	100	100	95-100	85-100	25-35	NP-10

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
274B	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	100	95-100	20-45	5-20
Seaton	9-39	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	39-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
274C2	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-35	5-15
Seaton	7-40	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	40-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
274C3	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-35	5-15
Seaton	5-44	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	44-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
274D2	0-9	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-35	5-15
Seaton	9-60	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
274D3	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-35	5-15
Seaton	5-44	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	44-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
274E	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	100	95-100	20-45	5-20
Seaton	6-47	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	47-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
274E2	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-35	5-15
Seaton	6-40	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	40-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
274G	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	100	95-100	20-45	5-20
Seaton	9-47	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	47-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
278A	0-9	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
Stronghurst	9-16	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	16-43	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	100	98-100	40-55	20-35
	43-60	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-40	5-20
278B	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
Stronghurst	7-48	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	100	98-100	40-55	20-35
	48-60	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-40	5-20

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
279B	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	24-35	8-15
Rozetta	8-13	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	20-30	5-15
	13-55	Silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	15-30
	55-60	Silt loam, silty clay loam.	CL	A-6, A-4	0	0	100	100	95-100	85-100	25-40	7-20
279C2	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	24-35	8-15
Rozetta	8-24	Silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	15-30
	24-60	Silt loam, silty clay loam.	CL	A-6, A-4	0	0	100	100	95-100	85-100	25-40	7-20
279C3	0-7	Silty clay loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	10-20
Rozetta	7-41	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-20
	41-60	Silt loam	CL	A-6, A-4	0	0	100	100	90-100	85-100	25-40	7-20
280B	0-7	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
Fayette	7-44	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	44-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
280C2	0-9	Silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-45	10-25
Fayette	9-34	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
280C3	0-6	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
Fayette	6-53	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	53-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
280D2	0-6	Silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-45	10-25
Fayette	6-44	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	44-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
280D3	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
Fayette	7-42	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	42-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
280E2----------	0-6	Silt loam------	CL	A-6, A-7	0	0	100	100	100	95-100	30-45	10-25
Fayette	6-50	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	50-60	Silt loam------	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
386B----------	0-9	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
Downs	9-15	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	15-57	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	57-60	Silt loam------	CL	A-6	0	0	100	100	100	95-100	30-40	11-20
386C2----------	0-7	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
Downs	7-46	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	46-60	Silt loam------	CL	A-6	0	0	100	100	100	95-100	30-40	11-20
403G----------	0-4	Very channery silt loam.	CL	A-6, A-7	0-5	15-35	80-100	70-100	60-95	50-90	30-45	10-20
Elizabeth	4-16	Very channery silt loam, gravelly clay loam, cobbly loam.	CL	A-6, A-7	0-5	10-35	80-100	70-100	60-95	50-90	30-45	10-20
	16-26	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
430B----------	0-17	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	4-15
Raddle	17-60	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	20-35	4-15
472D2----------	0-5	Silt loam------	CL	A-6	0	0	100	95-100	95-100	90-100	25-40	10-25
Baylis	5-24	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	95-100	90-100	30-45	15-25
	24-60	Silty clay loam, very cherty silty clay loam, extremely gravelly clay.	GC	A-7, A-6, A-2	0-5	15-40	40-80	30-80	30-70	30-50	35-50	20-35

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
472E2----------	0-7	Silt loam------	CL	A-6	0	0	100	95-100	95-100	90-100	25-40	10-25
Baylis	7-22	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	95-100	90-100	30-45	15-25
	22-60	Silty clay loam, cherty silty clay loam, extremely gravelly clay.	GC	A-7, A-6, A-2	0-5	15-40	40-80	30-80	30-70	30-50	35-50	20-35
551E2, 551G------	0-5	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	90-100	90-100	70-100	25-40	5-15
Gosport	5-28	Clay, silty clay, silty clay loam.	CH	A-7	0	0	100	90-100	90-100	85-100	50-65	35-50
	28-38	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
605D2----------	0-7	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	95-100	90-100	80-100	20-40	5-20
Ursa	7-60	Clay, silty clay loam, silty clay.	CH, CL	A-7	0	0-5	95-100	90-95	70-90	55-90	40-60	20-35
605D3----------	0-5	Silty clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	80-95	30-50	15-30
Ursa	5-60	Clay, clay loam, silty clay.	CH, CL	A-7	0	0-5	95-100	90-95	70-90	55-90	40-60	20-35
605E2----------	0-8	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	95-100	90-100	80-100	20-40	5-20
Ursa	8-12	Clay, clay loam, silty clay loam.	CH, CL	A-7	0	0-5	95-100	90-95	70-90	55-90	40-60	20-35
	12-60	Clay loam, loam, clay.	CL, CH	A-6, A-7	0-1	0-5	95-100	90-95	80-90	60-85	35-55	20-35
606E----------	0-5	Gravelly silt loam.	ML, CL, CL-ML	A-4	0	0-10	65-85	65-75	65-75	65-75	20-30	2-10
Goss	5-42	Extremely gravelly silt loam, very gravelly silt loam, gravelly silt loam.	GM, GC, GM-GC	A-2	0-5	5-40	40-60	35-55	30-50	25-35	20-30	2-10
	42-60	Gravelly silty clay, extremely gravelly silty clay, very gravelly silty clay.	GC, SC	A-7, A-2-7	0-5	5-45	45-70	20-65	20-50	20-45	50-70	30-40

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
606G---------- Goss	0-5	Gravelly silt loam.	ML, CL, CL-ML	A-4	0	0-10	65-85	65-75	65-75	65-75	20-30	2-10
	5-13	Very gravelly silty clay loam, gravelly silt loam, extremely gravelly silty clay loam.	GM, GC, GM-GC	A-2	0-5	5-40	40-60	35-55	30-50	25-35	20-30	2-10
	13-60	Gravelly silty clay, extremely gravelly silty clay, very gravelly silty clay.	GC, SC	A-7, A-2-7	0-5	5-45	45-70	20-65	20-50	20-45	50-70	30-40
785G---------- Lacrescent	0-21	Channery silt loam.	CL, ML	A-6, A-7	0	15-30	80-100	70-100	60-95	50-90	30-45	10-20
	21-38	Very gravelly silt loam, cobbly fine sandy loam, very cobbly loam.	SM, SC, ML, CL	A-4, A-6, A-2, A-1	0	30-55	55-80	45-80	40-65	20-60	20-35	3-12
	38-60	Extremely cobbly loam, very flaggy silt loam, very cobbly fine sandy loam.	SM, SC, ML, CL	A-4, A-6, A-2, A-1	0	50-65	50-75	40-65	35-60	15-55	0-30	NP-12
815---------- Udorthents	0-60	Silt loam------	CL-ML, CL	A-4, A-6, A-7	0	0	100	100	90-100	80-95	25-45	5-25
937E:												
Seaton----------	0-9	Silt loam------	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	100	95-100	20-45	5-20
	9-47	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	47-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-20
Hickory----------	0-7	Loam----------	CL, ML, CL-ML	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	3-15
	7-23	Clay loam, silty clay loam, loam.	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
	23-60	Sandy loam, loam, gravelly clay loam.	CL-ML, CL	A-4, A-6	0-1	0-5	85-100	75-95	70-95	60-80	20-40	5-20

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3028----------	0-14	Silt loam------	ML	A-4	0	0	100	100	90-100	80-100	25-35	4-10
Jules	14-60	Silt loam, silt	ML, CL-ML	A-4	0	0	100	100	90-100	80-100	25-35	4-10
3070, 3070L------	0-11	Silt loam------	CL, ML	A-6	0	0	100	100	90-100	80-100	30-40	10-20
Beaucoup	11-50	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-30
	50-60	Stratified very fine sandy loam to silty clay loam.	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	90-100	65-95	25-45	5-25
3071L----------	0-13	Silty clay loam	CL, ML	A-6	0	0	100	100	90-100	80-100	30-40	10-20
Darwin	13-48	Silty clay, clay.	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-30
	48-60	Silty clay loam, silty clay.	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	90-100	65-95	25-45	5-25
3092, 3092L------	0-10	Loamy sand-----	SM	A-2-4	0	0	100	100	60-80	15-35	0-14	NP
Sarpy	10-60	Fine sand, loamy sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	60-80	2-35	0-14	NP
3302----------	0-20	Silty clay loam	CL	A-7, A-6	0	0	100	100	85-100	80-95	30-45	10-20
Ambraw	20-30	Loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	100	85-95	45-75	25-40	5-15
	30-60	Stratified loamy sand to loam.	ML, CL-ML, SM, SC-SM	A-4, A-2	0	0	100	95-100	70-90	30-55	20-30	3-10
	60-72	Loamy sand-----	SP-SM, SM	A-2, A-1	0	0	95-100	80-95	20-40	5-30	0-14	NP
3302L----------	0-20	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	85-95	70-95	30-45	10-20
Ambraw	20-30	Clay loam------	CL, ML	A-6, A-7	0	0	100	100	85-95	50-85	30-50	10-25
	30-60	Stratified loamy sand to sandy loam.	SC, ML, SM, CL	A-6, A-4, A-2	0	0	100	90-100	80-90	30-80	15-40	NP-17
3331, 3331L------	0-9	Silt loam------	CL, CL-ML, ML	A-4	0	0	100	100	90-100	85-100	20-30	3-10
Haymond	9-40	Silt loam------	CL, CL-ML, ML	A-4	0	0	100	100	90-100	80-100	20-30	3-10
	40-60	Fine sandy loam, silt loam, loam.	SM, ML, CL, SC	A-4, A-6	0	0	95-100	90-100	65-100	35-90	15-35	2-15
3333, 3333L------	0-7	Silt loam------	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10
Wakeland	7-60	Silt loam------	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3404, 3404L------ Titus	0-22	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	40-55	20-30
	22-60	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	40-55	20-30
3415, 3415L------ Orion	0-6	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	80-100	25-35	4-12
	6-22	Stratified silt loam to very fine sand.	CL, CL-ML	A-4	0	0	100	100	90-100	70-80	20-30	4-10
	22-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	0	100	100	85-100	85-100	20-40	4-18
3428, 3428L------ Coffeen	0-18	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-40	5-20
	18-60	Silt loam------	ML, CL-ML, CL	A-4	0	0	100	100	90-100	80-95	20-35	3-10
3475, 3475L------ Elsah	0-6	Gravelly loam	CL-ML, CL, SC-SM, SC	A-4, A-6	0-1	10-15	75-90	55-70	40-65	35-60	20-35	5-15
	6-42	Gravelly loam, sandy loam, very gravelly sandy loam.	SM, SC, ML, CL	A-4, A-6	0-5	10-30	50-90	35-70	35-65	35-60	15-30	3-15
	42-60	Very gravelly loam, extremely gravelly loam, very gravelly sandy loam.	SM, ML, SC, CL	A-4, A-2-4, A-6, A-2-6	0-10	10-65	45-85	30-70	25-65	20-60	0-25	NP-15
4070---------- Beaucoup	0-21	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-25
	21-60	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-30
7088---------- Sparta	0-12	Loamy fine sand	SM	A-2, A-4	0	0	90-100	85-100	50-95	15-50	0-14	NP
	12-49	Fine sand, loamy fine sand, loamy sand.	SP-SM, SM	A-2, A-3, A-4	0	0	90-100	85-100	50-95	5-50	0-14	NP
	49-60	Fine sand------	SP-SM, SM, SP	A-2, A-3	0	0	90-100	85-100	50-95	2-30	0-14	NP
8070---------- Beaucoup	0-12	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-25
	12-46	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-30
	46-60	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	90-100	65-95	25-45	5-25

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
8071----------	0-13	Silty clay loam	CL, CH	A-7	0	0	100	100	100	90-100	45-65	25-40
Darwin	13-48	Silty clay, clay.	CH, CL	A-7	0	0	100	100	100	85-100	45-85	25-55
	48-60	Silty clay loam, silty clay.	CL, CH	A-7, A-6	0	0	100	100	95-100	90-100	35-70	20-45
8092----------	0-7	Loamy fine sand	SM	A-2-4	0	0	100	100	60-80	15-35	---	NP
Sarpy	7-60	Stratified loamy fine sand to sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	60-80	2-35	---	NP
8180----------	0-11	Silt loam------	ML, CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-35	1-15
Dupo	11-22	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	20-35	5-15
	22-60	Silty clay, clay, silty clay loam.	CL, CH	A-7, A-6	0	0	100	100	100	98-100	35-55	15-30
8183----------	0-11	Silty clay loam	CL	A-6	0	0	100	100	85-95	60-80	30-40	11-20
Shaffton	11-36	Loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	85-95	55-65	25-35	5-15
	36-46	Loamy sand, sandy loam, fine sandy loam.	SM, SC-SM, SP-SM	A-2	0	0	100	100	50-75	10-30	0-15	NP-5
	46-60	Stratified fine sand to loam.	SW, SP, SW-SM, SP-SM	A-1	0	0	90-100	90-95	20-35	3-5	0-14	NP
8217----------	0-6	Silt loam------	CL-ML, CL	A-4	0	0	100	100	95-100	90-100	20-30	4-9
Twomile	6-24	Silt loam, silt	CL-ML, CL	A-4	0	0	100	100	95-100	90-100	20-30	4-9
	24-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	95-100	90-100	85-95	30-45	15-25
8284----------	0-10	Silt loam------	CL	A-6, A-7	0	0	100	100	90-100	80-95	30-45	10-20
Tice	10-60	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	95-100	85-95	40-55	15-30
8288----------	0-11	Silt loam------	CL	A-6	0	0	100	95-100	80-95	80-90	30-40	10-20
Petrolia	11-34	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	85-100	35-45	15-25
	34-60	Silty clay loam, silt loam.	CL	A-4, A-6, A-7	0	0	100	95-100	80-100	60-100	20-45	8-20

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
8302----------	0-13	Loam----------	CL	A-6, A-7	0	0	100	100	85-95	55-80	30-45	10-20
Ambraw	13-46	Sandy clay loam, sandy loam.	CL	A-7, A-6	0	0	100	90-100	85-95	40-80	30-50	10-25
	46-60	Stratified clay loam to sandy loam.	SC, ML, CL, SM	A-6, A-4	0	0	100	90-100	80-90	40-80	20-40	NP-17
8331----------	0-8	Silt loam------	CL, CL-ML, ML	A-4	0	0	100	100	90-100	85-100	20-30	3-10
Haymond	8-41	Silt loam------	CL, CL-ML, ML	A-4	0	0	100	100	90-100	80-100	20-30	3-10
	41-60	Fine sandy loam, silt loam, loam.	SM, ML, CL, SC	A-4, A-6	0	0	95-100	90-100	65-100	35-90	15-35	2-15
8333----------	0-10	Silt loam------	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10
Wakeland	10-60	Silt loam------	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10
8341----------	0-19	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	85-95	60-75	25-40	5-15
Ambraw	19-34	Loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	100	85-95	45-75	25-40	5-15
	34-47	Stratified sandy loam to loam.	ML, CL-ML, SM, SC-SM	A-4, A-2	0	0	100	95-100	70-90	30-55	20-30	3-10
	47-60	Loamy fine sand	SP-SM, SM	A-2, A-1	0	0	95-100	80-95	20-40	5-30	0-14	NP
8395----------	0-14	Loam----------	CL-ML, CL	A-4	0	0	100	100	85-100	60-90	20-30	4-10
Ceresco	14-42	Fine sandy loam, loamy fine sand, silt loam.	SC-SM, CL, SC, CL-ML	A-2, A-4	0	0	100	100	60-95	15-80	20-30	4-10
	42-60	Fine sandy loam, silt loam, fine sand.	SC, SC-SM, CL, CL-ML	A-2, A-4	0	0	100	100	60-100	30-90	20-30	4-10
8396----------	0-10	Silt loam------	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
Vesser	10-22	Silt loam------	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
	22-60	Silt loam, silt	CL	A-7	0	0	100	100	98-100	95-100	40-50	15-25

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
8404----------	0-15	Silty clay-----	CH, CL	A-7	0	0	100	100	95-100	90-100	40-55	20-30
Titus	15-46	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	40-55	20-30
	46-60	Silty clay, silt loam, loam.	CL	A-6	0	0	100	90-100	70-90	55-85	20-40	10-25
8415----------	0-6	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	80-100	25-35	4-12
Orion	6-22	Stratified silt loam to very fine sand.	CL, CL-ML	A-4	0	0	100	100	90-100	70-80	20-30	4-10
	22-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	0	100	100	85-100	85-100	20-40	4-18
8428----------	0-14	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-40	5-20
Coffeen	14-45	Silt loam------	ML, CL-ML, CL	A-4	0	0	100	100	90-100	80-95	20-35	3-10
	45-60	Stratified silt loam to sandy loam.	ML, SM, SC, CL	A-4, A-2	0	0	100	90-100	85-100	30-85	15-30	NP-10
8451----------	0-8	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	20-40	5-20
Lawson	8-32	Silt loam, silty clay loam.	CL, CL-ML	A-4	0	0	100	100	90-100	85-100	20-30	5-10
	32-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	90-100	60-100	20-45	10-25
8452----------	0-13	Silty clay loam	CL	A-6	0	0	100	100	95-100	80-100	30-40	15-25
Riley	13-27	Loam, silty clay loam, silt loam.	CL, SC	A-6, A-7	0	0	100	100	90-100	40-85	35-50	15-25
	27-60	Loamy fine sand, sand, loamy sand.	SM, SC-SM, SP-SM	A-2, A-4	0	0	100	100	90-100	10-40	0-25	NP-7

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
8789:												
Ambraw	0-13	Loam	CL	A-6, A-7	0	0	100	100	85-95	85-95	30-45	10-20
	13-35	Sandy loam, sandy clay loam.	CL	A-7, A-6	0	0	100	90-100	85-95	40-80	30-50	10-25
	35-60	Stratified clay loam to sandy loam.	SC, ML, CL, SM	A-6, A-4	0	0	100	90-100	80-90	40-80	20-40	NP-17
Ceresco	0-7	Loam	CL-ML, CL	A-4	0	0	100	100	85-100	60-90	20-30	4-10
	7-42	Fine sandy loam, loam.	SC-SM, CL, SC, CL-ML	A-2, A-4	0	0	100	100	60-95	15-80	20-30	4-10
	42-60	Fine sandy loam, fine sand, silt loam.	SC, SC-SM, CL, CL-ML	A-2, A-4	0	0	100	100	60-100	30-90	20-30	4-10
Sarpy	0-7	Loamy fine sand	SM	A-2-4	0	0	100	100	60-80	15-35	---	NP
	7-60	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	60-80	2-35	---	NP

Table 16.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
5C2	0-5	20-27	1.35-1.55	0.6-2.0	0.15-0.24	5.1-7.3	Low	0.37	5	6	1-3
Blair	5-48	25-35	1.45-1.60	0.2-0.6	0.16-0.21	4.5-6.0	Moderate	0.37			
	48-60	18-35	1.45-1.60	0.2-0.6	0.16-0.21	5.1-7.8	Moderate	0.37			
5C3	0-5	27-35	1.35-1.55	0.2-0.6	0.14-0.18	5.1-7.3	Moderate	0.37	5	7	.5-1
Blair	5-43	25-35	1.45-1.60	0.2-0.6	0.16-0.21	4.5-6.0	Moderate	0.37			
	43-60	18-35	1.45-1.60	0.2-0.6	0.16-0.21	5.1-7.8	Moderate	0.37			
5D2	0-6	20-27	1.35-1.55	0.6-2.0	0.15-0.24	5.1-7.3	Low	0.37	5	6	1-3
Blair	6-34	25-35	1.45-1.60	0.2-0.6	0.16-0.21	4.5-6.0	Moderate	0.37			
	34-60	18-35	1.45-1.60	0.2-0.6	0.16-0.21	5.1-7.8	Moderate	0.37			
5D3	0-5	27-35	1.35-1.55	0.2-0.6	0.14-0.18	5.1-7.3	Moderate	0.37	5	7	.5-1
Blair	5-43	25-35	1.45-1.60	0.2-0.6	0.16-0.21	4.5-6.0	Moderate	0.37			
	43-60	18-35	1.45-1.60	0.2-0.6	0.16-0.21	5.1-7.8	Moderate	0.37			
8D2	0-6	19-25	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37	5	6	1-2
Hickory	6-60	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-6.0	Moderate	0.28			
8D3	0-6	27-35	1.40-1.65	0.6-2.0	0.17-0.19	4.5-7.3	Moderate	0.37	5	7	.5-1
Hickory	6-60	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-6.0	Moderate	0.28			
8E	0-7	19-25	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37	5	6	1-2
Hickory	7-23	20-32	1.45-1.65	0.6-2.0	0.18-0.20	4.5-7.3	Moderate	0.28			
	23-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Moderate	0.28			
8E2	0-5	19-25	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37	5	6	1-2
Hickory	5-24	20-32	1.45-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Moderate	0.28			
	24-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low	0.28			
8G	0-7	19-25	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37	5	6	1-2
Hickory	7-23	20-32	1.45-1.65	0.6-2.0	0.18-0.20	4.5-7.3	Moderate	0.28			
	23-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low	0.28			
17A	0-8	16-26	1.30-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.37	3	6	1-3
Keomah	8-10	16-26	1.35-1.45	0.2-0.6	0.18-0.20	4.5-7.3	Low	0.37			
	10-46	35-42	1.30-1.45	0.06-0.2	0.18-0.20	4.5-5.5	High	0.37			
	46-60	24-38	1.40-1.55	0.2-0.6	0.18-0.20	5.1-7.3	Moderate	0.37			
17B	0-10	16-26	1.30-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.37	3	6	1-3
Keomah	10-32	35-42	1.30-1.45	0.06-0.2	0.18-0.20	4.5-5.5	High	0.37			
	32-60	24-38	1.40-1.55	0.2-0.6	0.18-0.20	5.1-7.3	Moderate	0.37			
19B2	0-7	20-27	1.20-1.40	0.6-2.0	0.20-0.22	5.6-7.3	Low	0.37	5	6	1-2
Sylvan	7-47	25-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.37			
	47-60	18-27	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low	0.37			
19C2	0-9	20-27	1.20-1.40	0.6-2.0	0.20-0.22	5.6-7.3	Low	0.37	5	6	1-2
Sylvan	9-27	25-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.37			
	27-60	18-27	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low	0.37			
19C3	0-7	27-32	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Moderate	0.37	5	7	.5-1
Sylvan	7-25	25-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.37			
	25-60	18-27	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low	0.37			
19D3	0-5	27-32	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Moderate	0.37	5	7	.5-1
Sylvan	5-30	25-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.37			
	30-60	18-27	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low	0.37			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
30F	0-5	6-12	1.20-1.30	0.6-2.0	0.20-0.24	6.6-8.4	Low	0.43	5	4L	.5-2
Hamburg	5-60	6-12	1.20-1.30	0.6-2.0	0.17-0.22	7.4-8.4	Low	0.43			
30G	0-4	6-12	1.20-1.30	0.6-2.0	0.20-0.24	6.6-8.4	Low	0.43	5	4L	.5-2
Hamburg	4-60	6-12	1.20-1.30	0.6-2.0	0.17-0.22	7.4-8.4	Low	0.43			
36B	0-21	20-26	1.25-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.28	5	6	3-4
Tama	21-41	27-35	1.30-1.35	0.6-2.0	0.18-0.20	5.1-6.5	Moderate	0.43			
	41-60	20-30	1.35-1.40	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.43			
37B	0-22	15-22	1.20-1.40	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.32	5	6	3-4
Worthen	22-60	18-24	1.20-1.40	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.43			
43A	0-20	20-27	1.15-1.35	0.6-2.0	0.22-0.24	5.6-7.3	Moderate	0.28	5	6	4-5
Ipava	20-56	35-43	1.25-1.50	0.2-0.6	0.11-0.20	5.6-7.8	High	0.43			
	56-60	20-30	1.30-1.55	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.43			
43B	0-8	20-27	1.15-1.35	0.6-2.0	0.22-0.24	5.6-7.3	Moderate	0.28	5	6	4-5
Ipava	8-56	35-43	1.25-1.50	0.2-0.6	0.11-0.20	5.6-7.8	High	0.43			
	56-60	20-30	1.30-1.55	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.43			
46	0-18	20-27	1.15-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Moderate	0.28	5	6	3-4
Herrick	18-53	35-42	1.20-1.40	0.2-0.6	0.12-0.17	4.5-6.5	High	0.43			
	53-60	20-30	1.30-1.50	0.2-0.6	0.16-0.21	5.6-8.4	Moderate	0.43			
50	0-14	25-27	1.20-1.40	0.6-2.0	0.21-0.24	5.6-7.8	Moderate	0.28	5	6	4-6
Virden	14-36	35-42	1.20-1.45	0.2-0.6	0.11-0.20	5.6-7.8	High	0.28			
	36-60	25-33	1.25-1.55	0.2-0.6	0.18-0.22	6.1-8.4	Moderate	0.28			
61	0-8	20-26	1.35-1.55	0.6-2.0	0.22-0.25	5.6-7.3	Low	0.32	5	6	2-4
Atterberry	8-14	15-26	1.40-1.60	0.6-2.0	0.21-0.24	5.1-7.3	Low	0.32			
	14-49	25-35	1.40-1.60	0.6-2.0	0.14-0.24	5.1-7.3	Moderate	0.43			
	49-60	18-27	1.40-1.65	0.6-2.0	0.14-0.24	5.6-7.8	Low	0.43			
75B	0-16	10-20	1.20-1.40	0.6-2.0	0.20-0.24	5.6-8.4	Low	0.43	5	5	1-2
Drury	16-45	18-25	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Low	0.43			
	45-60	15-20	1.30-1.50	0.6-2.0	0.12-0.21	6.1-7.8	Low	0.43			
75C	0-17	10-20	1.20-1.40	0.6-2.0	0.20-0.24	5.6-8.4	Low	0.43	5	5	1-2
Drury	17-45	18-25	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Low	0.43			
	45-60	15-20	1.30-1.50	0.6-2.0	0.12-0.21	6.1-7.8	Low	0.43			
119D2	0-5	20-27	1.20-1.35	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	6	1-3
Elco	5-45	23-35	1.25-1.45	0.6-2.0	0.18-0.21	5.1-7.8	Moderate	0.37			
	45-60	23-35	1.40-1.60	0.2-0.6	0.16-0.20	5.1-7.8	Moderate	0.37			
119D3	0-5	25-33	1.20-1.35	0.6-2.0	0.18-0.21	5.6-7.3	Moderate	0.37	5	7	.5-1
Elco	5-43	23-35	1.25-1.45	0.6-2.0	0.18-0.21	5.1-7.8	Moderate	0.37			
	43-60	23-35	1.40-1.60	0.2-0.6	0.16-0.20	5.1-7.8	Moderate	0.37			
119E2	0-6	18-27	1.20-1.35	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	6	1-3
Elco	6-33	23-35	1.25-1.45	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.37			
	33-60	20-35	1.40-1.60	0.2-0.6	0.17-0.20	5.1-7.8	Moderate	0.37			
242A	0-16	20-27	1.15-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Kendall	16-60	22-35	1.30-1.50	0.6-2.0	0.18-0.20	4.5-7.3	Moderate	0.37			
257A	0-9	20-27	1.30-1.50	0.6-2.0	0.22-0.25	5.1-7.3	Moderate	0.37	5	6	2-3
Clarksdale	9-12	15-27	1.25-1.50	0.2-0.6	0.20-0.22	5.1-6.5	Low	0.37			
	12-45	35-45	1.30-1.50	0.2-0.6	0.11-0.20	5.1-7.3	High	0.37			
	45-60	20-30	1.40-1.60	0.2-0.6	0.20-0.22	5.6-8.4	Moderate	0.37			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
257B	0-9	27-30	1.30-1.50	0.6-2.0	0.22-0.25	5.1-7.3	Moderate	0.37	5	6	2-3
Clarksdale	9-43	35-45	1.30-1.50	0.2-0.6	0.11-0.20	5.1-7.3	High	0.37			
	43-60	20-30	1.40-1.60	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.37			
264D3	0-8	10-20	1.30-1.50	0.6-2.0	0.18-0.20	4.5-7.8	Low	0.32	4	3	.5-1
El Dara	8-60	18-30	1.35-1.60	0.6-2.0	0.12-0.19	4.5-7.3	Low	0.32			
264E	0-3	10-20	1.30-1.50	0.6-2.0	0.13-0.18	4.5-7.8	Low	0.24	5	3	1-3
El Dara	3-14	5-20	1.35-1.55	0.6-2.0	0.10-0.18	4.5-7.3	Low	0.24			
	14-42	18-30	1.35-1.60	0.6-2.0	0.12-0.19	4.5-7.3	Low	0.32			
	42-60	5-25	1.50-1.80	0.6-2.0	0.11-0.19	4.5-6.0	Low	0.24			
264E2	0-4	10-20	1.30-1.50	0.6-2.0	0.13-0.18	4.5-7.8	Low	0.24	5	3	1-3
El Dara	4-10	5-20	1.35-1.55	0.6-2.0	0.10-0.18	4.5-7.3	Low	0.24			
	10-60	18-30	1.35-1.60	0.6-2.0	0.12-0.19	4.5-7.3	Low	0.32			
264G	0-3	10-20	1.30-1.50	0.6-2.0	0.13-0.18	4.5-7.8	Low	0.24	5	3	1-3
El Dara	3-14	5-20	1.35-1.55	0.6-2.0	0.10-0.18	4.5-7.3	Low	0.24			
	14-42	18-30	1.35-1.60	0.6-2.0	0.12-0.19	4.5-7.3	Low	0.32			
	42-60	5-25	1.50-1.80	0.6-2.0	0.11-0.19	4.5-6.0	Low	0.24			
271C3, 271D3	0-7	10-18	1.30-1.60	0.6-2.0	0.20-0.24	6.1-7.8	Low	0.37	4	5	.5-1
Timula	7-60	10-18	1.40-1.60	0.6-2.0	0.18-0.20	7.4-8.4	Low	0.37			
271E2	0-8	10-18	1.30-1.60	0.6-2.0	0.20-0.24	6.1-7.8	Low	0.37	5	5	1-2
Timula	8-60	10-18	1.40-1.60	0.6-2.0	0.18-0.20	6.6-8.4	Low	0.37			
274B	0-9	10-22	1.10-1.45	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	5	1-3
Seaton	9-39	18-27	1.20-1.60	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
	39-60	10-25	1.20-1.50	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
274C2	0-7	15-22	1.10-1.20	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	5	1-3
Seaton	7-40	18-27	1.15-1.30	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
	40-60	15-25	1.20-1.40	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
274C3	0-5	15-22	1.10-1.20	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	4	5	.5-1
Seaton	5-44	18-27	1.15-1.30	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
	44-60	15-25	1.20-1.40	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
274D2	0-9	15-22	1.10-1.20	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	5	1-3
Seaton	9-60	18-27	1.15-1.30	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
274D3	0-5	15-22	1.10-1.20	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	4	5	.5-1
Seaton	5-44	18-27	1.15-1.30	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
	44-60	15-25	1.20-1.40	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
274E	0-6	10-22	1.10-1.45	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	5	1-3
Seaton	6-47	18-27	1.20-1.60	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
	47-60	10-25	1.20-1.50	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
274E2	0-6	15-22	1.10-1.20	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	5	1-3
Seaton	6-40	18-27	1.15-1.30	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
	40-60	15-25	1.20-1.40	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
274G	0-6	10-22	1.10-1.45	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	5	1-3
Seaton	6-47	18-27	1.20-1.60	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37			
	47-60	10-25	1.20-1.50	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
278A	0-9	20-27	1.25-1.45	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Stronghurst	9-16	20-27	1.30-1.50	0.6-2.0	0.20-0.22	5.1-7.3	Low	0.37			
	16-43	22-35	1.30-1.55	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.37			
	43-60	20-27	1.35-1.60	0.6-2.0	0.20-0.22	5.6-7.8	Low	0.37			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
278B	0-7	20-27	1.25-1.45	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Stronghurst	7-48	22-35	1.30-1.55	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.37			
	48-60	20-27	1.35-1.60	0.6-2.0	0.20-0.22	5.6-7.8	Low	0.37			
279B	0-8	15-27	1.20-1.40	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Rozetta	8-13	12-27	1.20-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.37			
	13-55	27-35	1.35-1.55	0.6-2.0	0.18-0.22	4.5-6.0	Moderate	0.37			
	55-60	20-30	1.40-1.60	0.6-2.0	0.20-0.22	5.6-7.8	Low	0.37			
279C2	0-8	15-27	1.20-1.40	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Rozetta	8-24	27-35	1.35-1.55	0.6-2.0	0.18-0.22	4.5-6.0	Moderate	0.37			
	24-60	20-30	1.40-1.60	0.6-2.0	0.20-0.22	5.6-7.8	Low	0.37			
279C3	0-7	27-35	1.30-1.45	0.6-2.0	0.18-0.22	5.1-7.3	Moderate	0.43	5	7	.5-1
Rozetta	7-41	27-35	1.35-1.50	0.6-2.0	0.18-0.20	4.5-6.5	Moderate	0.43			
	41-60	15-27	1.40-1.60	0.6-2.0	0.20-0.22	5.6-7.8	Low	0.43			
280B	0-7	15-27	1.30-1.35	0.6-2.0	0.20-0.22	5.1-7.3	Low	0.32	5	6	1-3
Fayette	7-44	25-35	1.30-1.45	0.6-2.0	0.18-0.20	4.5-6.5	Moderate	0.43			
	44-60	22-26	1.45-1.50	0.6-2.0	0.18-0.20	5.1-7.8	Moderate	0.43			
280C2	0-9	25-27	1.35-1.45	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.37	5	6	1-3
Fayette	9-34	25-35	1.30-1.45	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.43			
	34-60	22-26	1.45-1.50	0.6-2.0	0.18-0.20	5.1-7.8	Moderate	0.43			
280C3	0-6	27-32	1.35-1.45	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.43	4	7	.5-1
Fayette	6-53	25-35	1.30-1.45	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.43			
	53-60	22-26	1.45-1.50	0.6-2.0	0.18-0.20	5.1-7.8	Moderate	0.43			
280D2	0-6	25-27	1.35-1.45	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.37	5	6	1-3
Fayette	6-44	25-35	1.30-1.45	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.43			
	44-60	22-26	1.45-1.50	0.6-2.0	0.18-0.20	5.1-7.8	Moderate	0.43			
280D3	0-7	27-32	1.35-1.45	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.43	4	7	.5-1
Fayette	7-42	25-35	1.30-1.45	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.43			
	42-60	22-26	1.45-1.50	0.6-2.0	0.18-0.20	5.1-7.8	Moderate	0.43			
280E2	0-6	25-27	1.35-1.45	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.37	5	6	1-2
Fayette	6-50	25-35	1.30-1.45	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.43			
	50-60	22-26	1.45-1.50	0.6-2.0	0.18-0.20	5.1-7.8	Moderate	0.43			
386B	0-9	15-25	1.25-1.30	2.0-6.0	0.21-0.23	5.1-7.3	Low	0.32	5	6	2-3
Downs	9-15	15-27	1.30-1.35	0.6-2.0	0.18-0.20	5.1-7.3	Low	0.37			
	15-57	26-35	1.30-1.35	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.43			
	57-60	18-27	1.35-1.45	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.43			
386C2	0-7	15-25	1.25-1.30	2.0-6.0	0.21-0.23	5.1-7.3	Low	0.32	5	6	2-3
Downs	7-46	26-35	1.30-1.35	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.43			
	46-60	18-27	1.35-1.45	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.43			
403G	0-4	18-27	1.15-1.25	0.6-2.0	0.15-0.20	6.1-8.4	Low	0.20	1	8	2-5
Elizabeth	4-16	18-35	1.25-1.40	0.6-2.0	0.15-0.22	6.1-8.4	Low	0.20			
	16-26	---	---	0.06-0.6	---	---	---	---			
430B	0-17	18-24	1.20-1.40	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.32	5	6	2-4
Raddle	17-60	18-24	1.20-1.40	0.6-2.0	0.20-0.22	5.6-7.3	Low	0.43			
472D2	0-5	20-27	1.30-1.50	0.6-2.0	0.21-0.25	5.6-6.5	Moderate	0.37	4	6	1-3
Baylis	5-24	27-35	1.35-1.60	0.6-2.0	0.20-0.24	4.5-6.5	Moderate	0.37			
	24-60	35-42	1.25-1.45	0.6-2.0	0.06-0.08	4.5-7.3	Moderate	0.28			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
472E2	0-7	20-27	1.30-1.50	0.6-2.0	0.21-0.25	5.6-6.5	Moderate--	0.37	4	6	1-3
Baylis	7-22	27-35	1.35-1.60	0.6-2.0	0.20-0.24	4.5-6.5	Moderate--	0.37			
	22-60	35-42	1.25-1.45	0.6-2.0	0.06-0.08	4.5-7.3	Moderate--	0.28			
551E2	0-5	18-27	1.30-1.40	0.2-0.6	0.18-0.20	5.1-6.5	Low-------	0.43	3	6	1-2
Gosport	5-28	36-60	1.50-1.60	0-0.06	0.12-0.14	3.6-5.5	High------	0.32			
	28-60	---	---	0-0.06	---	---	----------	----			
551G	0-5	18-27	1.30-1.40	0.2-0.6	0.18-0.20	5.1-6.5	Low-------	0.43	3	6	1-3
Gosport	5-28	36-60	1.50-1.60	0-0.06	0.12-0.14	3.6-5.5	High------	0.32			
	28-38	---	---	0-0.06	---	---	----------	----			
605D2	0-7	15-27	1.30-1.50	0.6-2.0	0.20-0.24	4.5-7.3	Low-------	0.43	3	6	1-3
Ursa	7-60	35-45	1.50-1.70	0.06-0.2	0.09-0.17	4.5-7.3	High------	0.32			
605D3	0-5	35-40	1.40-1.60	0.2-0.6	0.11-0.19	4.5-7.3	Moderate--	0.43	5	4	.5-1
Ursa	5-60	35-45	1.50-1.70	0.06-2.0	0.09-0.17	4.5-7.3	High------	0.32			
605E2	0-8	15-27	1.30-1.50	0.6-2.0	0.20-0.24	4.5-7.3	Low-------	0.43	3	6	1-3
Ursa	8-12	35-45	1.50-1.70	0.06-0.2	0.09-0.17	4.5-7.3	High------	0.32			
	12-60	25-45	1.55-1.75	0.2-0.6	0.08-0.18	5.6-7.8	Moderate--	0.32			
606E	0-5	10-27	1.10-1.30	2.0-6.0	0.06-0.17	4.5-6.5	Low-------	0.24	2	8	.5-2
Goss	5-42	20-30	1.10-1.30	2.0-6.0	0.06-0.10	4.5-6.0	Low-------	0.10			
	42-60	35-80	1.30-1.50	0.6-2.0	0.06-0.17	4.5-6.5	Low-------	0.24			
606G	0-5	10-27	1.10-1.30	2.0-6.0	0.06-0.17	4.5-6.5	Low-------	0.24	2	8	.5-2
Goss	5-13	20-30	1.10-1.30	2.0-6.0	0.06-0.10	4.5-6.0	Low-------	0.10			
	13-60	35-80	1.30-1.50	0.6-2.0	0.04-0.09	4.5-6.0	Moderate--	0.10			
785G	0-21	18-33	1.25-1.40	0.6-2.0	0.15-0.22	6.6-7.8	Low-------	0.20	5	8	3-5
Lacrescent	21-38	8-23	1.30-1.50	0.6-2.0	0.06-0.09	6.6-8.4	Low-------	0.32			
	38-60	8-20	1.30-1.50	2.0-6.0	0.05-0.08	7.4-8.4	Low-------	0.32			
815	0-60	20-35	1.35-1.55	0.2-2.0	0.18-0.22	5.1-7.8	Moderate--	0.43	5	4	.2-1
Udorthents											
937E:											
Seaton	0-9	10-22	1.10-1.45	0.6-2.0	0.22-0.24	5.6-7.3	Low-------	0.37	5	5	1-3
	9-47	18-27	1.20-1.60	0.6-2.0	0.20-0.22	4.5-7.3	Low-------	0.37			
	47-60	10-25	1.20-1.50	0.6-2.0	0.20-0.22	5.6-8.4	Low-------	0.37			
Hickory	0-7	19-25	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low-------	0.37	5	6	1-2
	7-23	22-32	1.45-1.65	0.6-2.0	0.15-0.19	4.5-7.3	Moderate--	0.28			
	23-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low-------	0.28			
3028	0-14	10-20	1.15-1.40	0.6-2.0	0.20-0.24	6.6-8.4	Low-------	0.37	5	4L	1-2
Jules	14-60	8-18	1.20-1.50	0.6-2.0	0.17-0.22	7.4-8.4	Low-------	0.37			
3070, 3070L	0-11	18-27	1.25-1.40	0.2-0.6	0.22-0.24	5.6-7.8	Low-------	0.32	5	6	5-6
Beaucoup	11-50	27-35	1.30-1.50	0.2-0.6	0.18-0.20	5.6-7.8	Moderate--	0.32			
	50-60	15-30	1.35-1.55	0.2-0.6	0.18-0.22	5.6-7.8	Moderate--	0.32			
3071L	0-13	30-40	1.25-1.40	0-0.06	0.11-0.14	5.6-7.8	Moderate--	0.32	5	6	5-6
Darwin	13-48	40-55	1.30-1.50	0-0.06	0.11-0.14	5.6-7.8	Very high-	0.32			
	48-60	35-50	1.35-1.55	0.06-0.2	0.10-0.20	5.6-7.8	Very high-	0.32			
3092, 3092L	0-10	2-5	1.20-1.50	6.0-20	0.05-0.09	6.1-8.4	Low-------	0.17	5	2	.5-1
Sarpy	10-60	2-5	1.20-1.50	6.0-20	0.05-0.09	7.4-8.4	Low-------	0.15			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
3302----------	0-20	27-32	1.35-1.50	0.6-2.0	0.15-0.19	5.6-7.3	Moderate--	0.28	4	7	2-3
Ambraw	20-30	18-34	1.40-1.65	0.6-2.0	0.10-0.18	5.6-7.3	Moderate--	0.28			
	30-60	10-24	1.45-1.70	2.0-6.0	0.13-0.18	5.6-7.3	Low-------	0.20			
	60-72	2-12	1.55-1.75	6.0-20	0.06-0.09	6.1-7.8	Low-------	0.15			
3302L----------	0-20	27-35	1.30-1.50	0.6-2.0	0.15-0.19	5.6-7.3	Moderate--	0.32	5	7	2-3
Ambraw	20-30	20-35	1.45-1.70	0.2-0.6	0.15-0.24	5.6-7.3	Moderate--	0.32			
	30-60	10-30	1.50-1.70	0.2-0.6	0.10-0.20	6.1-8.4	Low-------	0.43			
3331, 3331L------	0-9	10-20	1.30-1.50	0.6-2.0	0.20-0.24	5.6-7.8	Low-------	0.49	5	5	1-3
Haymond	9-40	10-18	1.30-1.50	0.6-2.0	0.20-0.24	5.6-7.8	Low-------	0.55			
	40-60	5-26	1.30-1.50	0.6-2.0	0.14-0.22	6.1-7.8	Low-------	0.43			
3333, 3333L------	0-7	10-17	1.30-1.50	0.6-2.0	0.22-0.24	5.6-7.3	Low-------	0.37	5	5	1-3
Wakeland	7-60	10-17	1.30-1.50	0.6-2.0	0.20-0.22	5.6-7.8	Low-------	0.37			
3404, 3404L------	0-22	35-42	1.30-1.50	0.06-0.2	0.18-0.22	6.1-7.3	High------	0.32	5	4	5-6
Titus	22-60	35-45	1.30-1.60	0.06-0.2	0.11-0.22	6.1-7.8	High------	0.32			
3415, 3415L------	0-6	10-18	1.20-1.30	0.6-2.0	0.22-0.24	5.6-7.8	Low-------	0.37	5	5	1-3
Orion	6-22	10-18	1.20-1.30	0.6-2.0	0.20-0.22	5.6-7.8	Low-------	0.37			
	22-60	10-30	1.25-1.45	0.6-2.0	0.18-0.22	5.6-7.8	Low-------	0.37			
3428, 3428L------	0-18	15-27	1.35-1.55	0.6-2.0	0.22-0.25	5.6-7.8	Low-------	0.32	5	6	2-3
Coffeen	18-60	10-18	1.40-1.60	0.6-2.0	0.20-0.22	5.6-7.3	Low-------	0.32			
3475, 3475L------	0-6	10-20	1.40-1.60	0.6-2.0	0.13-0.18	5.6-7.8	Low-------	0.24	5	8	1-2
Elsah	6-42	8-18	1.30-1.50	0.6-2.0	0.08-0.17	5.6-7.8	Low-------	0.32			
	42-60	5-18	1.50-1.75	2.0-20	0.05-0.10	6.6-7.8	Low-------	0.24			
4070----------	0-21	27-35	1.15-1.35	0.2-0.6	0.15-0.20	5.6-7.8	Moderate--	0.32	5	7	5-6
Beaucoup	21-60	27-35	1.30-1.50	0.2-0.6	0.18-0.20	5.6-7.8	Moderate--	0.32			
7088----------	0-12	3-10	1.20-1.40	2.0-6.0	0.09-0.12	5.1-7.3	Low-------	0.17	5	2	1-2
Sparta	12-49	1-8	1.40-1.60	6.0-20	0.05-0.10	5.1-6.5	Low-------	0.17			
	49-60	0-5	1.50-1.70	6.0-20	0.05-0.08	5.1-6.0	Low-------	0.17			
8070----------	0-12	27-35	1.15-1.35	0.2-0.6	0.15-0.20	5.6-7.8	Moderate--	0.32	5	7	5-6
Beaucoup	12-46	27-35	1.30-1.50	0.2-0.6	0.18-0.20	5.6-7.8	Moderate--	0.32			
	46-60	15-30	1.35-1.55	0.2-0.6	0.18-0.22	5.6-7.8	Moderate--	0.32			
8071----------	0-13	35-40	1.20-1.40	0-0.06	0.11-0.14	6.1-7.8	High------	0.28	5	4	4-5
Darwin	13-48	45-60	1.30-1.50	0-0.06	0.11-0.14	6.1-7.8	Very high-	0.28			
	48-60	30-55	1.40-1.60	0.06-0.2	0.10-0.20	6.6-8.4	High------	0.28			
8092----------	0-7	2-5	1.20-1.50	6.0-20	0.05-0.09	6.6-8.4	Low-------	0.17	5	2	.5-1
Sarpy	7-60	2-5	1.20-1.50	6.0-20	0.05-0.09	6.6-8.4	Low-------	0.15			
8180----------	0-11	10-18	1.25-1.45	0.6-2.0	0.22-0.24	5.6-8.4	Low-------	0.37	5	5	1-2
Dupo	11-22	10-18	1.30-1.50	0.6-2.0	0.20-0.22	5.6-8.4	Low-------	0.37			
	22-60	35-45	1.35-1.60	0.06-0.2	0.08-0.19	6.6-7.8	High------	0.37			
8183----------	0-11	27-30	1.45-1.55	0.6-2.0	0.20-0.22	5.1-7.3	Moderate--	0.28	5	6	2-3
Shaffton	11-36	18-30	1.55-1.65	0.6-2.0	0.17-0.19	4.5-6.0	Moderate--	0.28			
	36-46	8-16	1.65-1.70	6.0-20	0.05-0.08	4.5-6.0	Low-------	0.17			
	46-60	2-6	1.65-1.75	>20	0.03-0.05	6.1-7.3	Low-------	0.15			
8217----------	0-6	10-18	1.35-1.45	0.6-2.0	0.22-0.24	4.5-7.8	Low-------	0.43	5	5	1-2
Twomile	6-24	10-18	1.35-1.45	0.6-2.0	0.22-0.24	4.5-7.3	Low-------	0.43			
	24-60	25-35	1.30-1.40	0.06-0.2	0.08-0.10	3.6-6.5	Moderate--	0.43			
8284----------	0-10	22-27	1.25-1.45	0.6-2.0	0.21-0.24	5.6-7.8	Moderate--	0.32	5	4	2-3
Tice	10-60	24-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.8	Moderate--	0.32			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
8288----------	0-11	20-27	1.25-1.45	0.2-0.6	0.22-0.24	5.6-8.4	Low-------	0.32	5	6	2-3
Petrolia	11-34	27-35	1.35-1.45	0.2-0.6	0.18-0.20	5.6-7.3	Moderate--	0.32			
	34-60	20-35	1.40-1.60	0.2-0.6	0.18-0.20	4.5-7.8	Moderate--	0.32			
8302----------	0-13	18-35	1.30-1.55	0.6-2.0	0.15-0.22	5.6-7.3	Moderate--	0.28	5	6	2-3
Ambraw	13-46	15-30	1.40-1.65	0.2-2.0	0.10-0.15	5.1-7.3	Moderate--	0.32			
	46-60	18-30	1.35-1.65	0.2-2.0	0.11-0.22	5.6-8.4	Low-------	0.43			
8331----------	0-8	10-20	1.30-1.50	0.6-2.0	0.20-0.24	5.6-7.8	Low-------	0.49	5	5	1-3
Haymond	8-41	10-18	1.30-1.50	0.6-2.0	0.20-0.24	5.6-7.8	Low-------	0.55			
	41-60	5-26	1.30-1.50	0.6-2.0	0.14-0.22	6.1-7.8	Low-------	0.43			
8333----------	0-10	10-17	1.30-1.50	0.6-2.0	0.22-0.24	5.6-7.3	Low-------	0.37	5	5	1-3
Wakeland	10-60	10-17	1.30-1.50	0.6-2.0	0.20-0.22	5.6-7.8	Low-------	0.37			
8341----------	0-19	16-30	1.35-1.55	0.6-2.0	0.16-0.25	5.6-7.3	Low-------	0.28	4	6	2-3
Ambraw	19-34	18-34	1.40-1.65	0.6-2.0	0.10-0.18	5.6-7.3	Moderate--	0.28			
	34-47	12-24	1.45-1.70	2.0-6.0	0.13-0.18	5.6-7.3	Low-------	0.20			
	47-60	2-12	1.55-1.75	6.0-20	0.06-0.09	6.1-7.8	Low-------	0.15			
8395----------	0-14	10-15	1.35-1.60	2.0-6.0	0.20-0.24	6.1-7.8	Low-------	0.24	5	5	3-5
Ceresco	14-42	10-18	1.40-1.70	0.6-6.0	0.09-0.17	6.1-7.8	Low-------	0.24			
	42-60	5-18	1.40-1.70	0.6-6.0	0.11-0.20	6.6-8.4	Low-------	0.24			
8396----------	0-10	20-26	1.30-1.35	0.6-2.0	0.20-0.24	5.6-7.3	Moderate--	0.28	5	6	2-3
Vesser	10-22	18-22	1.35-1.40	0.6-2.0	0.18-0.22	5.1-6.0	Moderate--	0.43			
	22-60	10-25	1.40-1.45	0.6-2.0	0.17-0.21	5.1-6.5	Moderate--	0.43			
8404----------	0-15	40-45	1.30-1.50	0.06-0.2	0.11-0.18	6.1-7.3	High------	0.32	5	4	5-6
Titus	15-46	35-45	1.30-1.60	0.06-0.2	0.11-0.22	6.1-7.8	High------	0.32			
	46-60	20-42	1.45-1.75	0.2-0.6	0.10-0.20	6.1-7.8	Moderate--	0.32			
8415----------	0-6	10-18	1.20-1.30	0.6-2.0	0.22-0.24	5.6-7.8	Low-------	0.37	5	5	1-3
Orion	6-22	10-18	1.20-1.30	0.6-2.0	0.20-0.22	5.6-7.8	Low-------	0.37			
	22-60	10-30	1.25-1.45	0.6-2.0	0.18-0.22	5.6-7.8	Low-------	0.37			
8428----------	0-14	15-27	1.35-1.55	0.6-2.0	0.22-0.25	5.6-7.8	Low-------	0.32	5	6	2-3
Coffeen	14-45	10-18	1.40-1.60	0.6-2.0	0.20-0.22	5.6-7.3	Low-------	0.32			
	45-60	5-15	1.50-1.70	0.6-6.0	0.11-0.19	5.6-7.3	Low-------	0.32			
8451----------	0-8	10-27	1.20-1.55	0.6-2.0	0.22-0.24	6.1-7.8	Low-------	0.28	5	5	3-7
Lawson	8-32	10-30	1.20-1.55	0.6-2.0	0.18-0.22	6.1-7.8	Low-------	0.28			
	32-60	18-30	1.55-1.65	0.6-2.0	0.18-0.20	6.1-7.8	Moderate--	0.43			
8452----------	0-13	27-35	1.15-1.35	0.6-2.0	0.17-0.23	5.6-7.8	Moderate--	0.28	4	7	3-4
Riley	13-27	24-35	1.25-1.45	0.6-2.0	0.16-0.20	5.6-7.8	Moderate--	0.28			
	27-60	2-10	1.65-1.80	6.0-20	0.05-0.10	6.6-8.4	Low-------	0.17			
8789:											
Ambraw----------	0-13	20-27	1.25-1.45	0.6-2.0	0.15-0.19	5.6-7.3	Moderate--	0.32	5	7	2-3
	13-35	15-30	1.40-1.65	0.2-2.0	0.10-0.15	5.1-7.3	Moderate--	0.32			
	35-60	18-30	1.35-1.65	0.2-2.0	0.11-0.22	5.6-8.4	Low-------	0.43			
Ceresco---------	0-7	10-15	1.35-1.60	2.0-6.0	0.20-0.24	6.1-7.8	Low-------	0.28	5	5	3-5
	7-42	10-18	1.40-1.70	0.6-6.0	0.09-0.17	6.1-7.8	Low-------	0.24			
	42-60	10-18	1.40-1.70	0.6-6.0	0.11-0.20	6.6-8.4	Low-------	0.24			
Sarpy-----------	0-7	2-5	1.20-1.50	6.0-20	0.05-0.09	6.6-8.4	Low-------	0.17	5	2	.5-1
	7-60	2-5	1.20-1.50	6.0-20	0.05-0.09	6.6-8.4	Low-------	0.15			

Table 17.--Water Features

("Flooding" and "water table" and terms such as "frequent," "brief," "apparent," and "perched" are explained in the text)

Map symbol and soil name	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Water table depth	Kind of water table	Months
					Ft		
5C2, 5C3, 5D2, 5D3---Blair	C	None	---	---	1.5-3.5	Apparent	Mar-Jun
8D2, 8D3, 8E, 8E2, 8G---Hickory	C	None	---	---	>6.0	---	---
17A, 17B---Keomah	C	None	---	---	2.0-4.0	Apparent	Nov-Jul
19B2, 19C2, 19C3, 19D3---Sylvan	B	None	---	---	4.0-6.0	Apparent	Mar-May
30F, 30G---Hamburg	B	None	---	---	>6.0	---	---
36B---Tama	B	None	---	---	4.0-6.0	Apparent	Nov-Jun
37B---Worthen	B	None	---	---	>6.0	---	---
43A, 43B---Ipava	B	None	---	---	1.0-3.0	Apparent	Mar-Jun
46---Herrick	B	None	---	---	1.5-3.0	Apparent	Mar-Jun
50---Virden	B/D	None	---	---	+0.5-2.0	Apparent	Mar-Jun
61---Atterberry	B	None	---	---	1.5-3.0	Apparent	Mar-Jun
75B, 75C---Drury	B	None	---	---	>6.0	---	---
119D2, 119D3, 119E2---Elco	B	None	---	---	2.5-4.5	Perched	Mar-May
242A---Kendall	B	None	---	---	1.0-3.0	Apparent	Mar-Jun
257A, 257B---Clarksdale	C	None	---	---	1.0-3.0	Apparent	Mar-Jun
264D3, 264E, 264E2---El Dara	B	None	---	---	4.0-6.0	Apparent	Apr-May
264G---El Dara	B	None	---	---	>6.0	---	---
271C3, 271D3, 271E2---Timula	B	None	---	---	>6.0	---	---

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Water table depth	Kind of water table	Months
					Ft		
274B, 274C2, 274C3, 274D2, 274D3, 274E, 274E2, 274G----- Seaton	B	None-------	---	---	>6.0	---	---
278A, 278B------- Stronghurst	B	None-------	---	---	1.0-3.0	Apparent---	Mar-Jun
279B, 279C2, 279C3----------- Rozetta	B	None-------	---	---	4.0-6.0	Apparent---	Mar-Jun
280B, 280C2, 280C3, 280D2, 280D3, 280E2---- Fayette	B	None-------	---	---	>6.0	---	---
386B, 386C2------ Downs	B	None-------	---	---	4.0-6.0	Apparent---	Mar-Jun
403G------------- Elizabeth	B	None-------	---	---	>6.0	---	---
430B------------- Raddle	B	None-------	---	---	>6.0	---	---
472D2, 472E2----- Baylis	B	None-------	---	---	>6.0	---	---
551E2, 551G------ Gosport	C	None-------	---	---	>6.0	---	---
605D2, 605D3, 605E2----------- Ursa	C	None-------	---	---	>6.0	---	---
606E, 606G------- Goss	B	None-------	---	---	>6.0	---	---
785G------------- Lacrescent	B	None-------	---	---	>6.0	---	---
815-------------- Udorthents	B	None-------	---	---	>3.0	Perched----	Jan-Jun
937E: Seaton----------	B	None-------	---	---	>6.0	---	---
Hickory---------	C	None-------	---	---	>6.0	---	---
3028------------- Jules	B	Frequent---	Brief-----	Feb-Jun	3.5-6.0	Apparent---	Mar-May
3070------------- Beaucoup	B/D	Frequent---	Brief-----	Mar-Jun	+0.5-1.0	Apparent---	Mar-Jun
3070L------------ Beaucoup	B/D	Frequent---	Long------	Mar-Jun	+0.5-1.0	Apparent---	Mar-Jun
3071L------------ Darwin	B/D	Frequent---	Long------	Mar-Jun	+0.5-1.0	Apparent---	Mar-Jun

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Water table depth	Kind of water table	Months
					Ft		
3092---------- Sarpy	A	Frequent---	Brief-----	Nov-Jun	>6.0	---	---
3092L---------- Sarpy	A	Frequent---	Long------	Nov-Jun	>6.0	---	---
3302---------- Ambraw	B/D	Frequent---	Brief-----	Feb-Nov	0.0-2.0	Apparent---	Nov-Jul
3302L---------- Ambraw	B/D	Frequent---	Long------	Mar-Jun	+3.0-1.0	Apparent---	Mar-Jun
3331---------- Haymond	B	Frequent---	Brief-----	Jan-May	>6.0	---	---
3331L---------- Haymond	B	Frequent---	Long------	Jan-May	>6.0	---	---
3333---------- Wakeland	C	Frequent---	Brief-----	Jan-May	1.0-3.0	Apparent---	Jan-Apr
3333L---------- Wakeland	C	Frequent---	Long------	Jan-May	1.0-3.0	Apparent---	Jan-Apr
3404---------- Titus	B/D	Frequent---	Brief-----	Mar-Jun	+0.5-2.0	Apparent---	Mar-Jun
3404L---------- Titus	B/D	Frequent---	Long------	Mar-Jun	+0.5-2.0	Apparent---	Mar-Jun
3415---------- Orion	C	Frequent---	Brief-----	Mar-Nov	1.0-3.0	Apparent---	Nov-May
3415L---------- Orion	C	Frequent---	Long------	Mar-Nov	1.0-3.0	Apparent---	Nov-May
3428---------- Coffeen	B	Frequent---	Brief-----	Mar-May	1.0-3.0	Apparent---	Jan-May
3428L---------- Coffeen	B	Frequent---	Long------	Mar-May	1.0-3.0	Apparent---	Jan-May
3475---------- Elsah	B	Frequent---	Brief-----	Jan-May	>6.0	---	---
3475L---------- Elsah	B	Frequent---	Long------	Jan-May	>6.0	---	---
4070---------- Beaucoup	B/D	Occasional	Brief-----	Mar-Jun	+0.5-1.0	Apparent---	Mar-Jun
7088---------- Sparta	A	Rare-------	---	---	>6.0	---	---
8070---------- Beaucoup	B/D	Occasional	Brief-----	Mar-Jun	+0.5-1.0	Apparent---	Mar-Jun
8071---------- Darwin	D	Occasional	Brief-----	Jan-Jun	+1.0-1.5	Apparent---	Jan-Jun
8092---------- Sarpy	A	Occasional	Long------	Nov-Jun	>6.0	---	---

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Water table depth	Kind of water table	Months
					Ft		
8180---------- Dupo	C	Occasional	Brief-----	Jan-Jun	1.5-3.5	Apparent---	Jan-Jun
8183---------- Shaffton	B	Occasional	Brief-----	Feb-Nov	2.0-4.0	Apparent---	Nov-Jul
8217---------- Twomile	C/D	Occasional	Brief-----	Mar-Jul	1.0-2.0	Perched----	Nov-May
8284---------- Tice	B	Occasional	Long------	Jan-Jun	1.5-3.0	Apparent---	Mar-Jun
8288---------- Petrolia	C/D	Occasional	Brief-----	Mar-Jun	+1.0-1.0	Apparent---	Apr-Jun
8302---------- Ambraw	B/D	Occasional	Long------	Mar-Jun	0.0-1.0	Apparent---	Mar-Jun
8331---------- Haymond	B	Occasional	Brief-----	Jan-May	>6.0	---	---
8333---------- Wakeland	C	Occasional	Long------	Jan-May	1.0-3.0	Apparent---	Jan-Apr
8341---------- Ambraw	B/D	Occasional	Long------	Feb-Nov	0.0-2.0	Apparent---	Nov-Jul
8395---------- Ceresco	B	Occasional	Brief-----	Mar-May	1.0-2.0	Apparent---	Sep-May
8396---------- Vesser	C	Occasional	Brief-----	Feb-Nov	1.0-3.0	Apparent---	Nov-Jul
8404---------- Titus	B/D	Occasional	Brief-----	Mar-Jun	+0.5-2.0	Apparent---	Mar-Jun
8415---------- Orion	C	Occasional	Brief-----	Mar-Nov	1.0-3.0	Apparent---	Nov-May
8428---------- Coffeen	B	Occasional	Brief-----	Mar-May	1.0-3.0	Apparent---	Jan-May
8451---------- Lawson	C	Occasional	Long------	Mar-Nov	1.0-3.0	Apparent---	Nov-May
8452---------- Riley	B	Occasional	Brief-----	Apr-Jun	1.5-3.0	Apparent---	Apr-Jun
8789:							
Ambraw----------	B/D	Occasional	Long------	Mar-Jun	0.0-1.0	Apparent---	Mar-Jun
Ceresco----------	B	Occasional	Brief-----	Mar-May	1.0-2.0	Apparent---	Sep-May
Sarpy----------	A	Occasional	Long------	Nov-Jun	>6.0	---	---

Table 18.--Soil Features

(See text for definitions of "low," "moderate," and "high")

Map symbol and soil name	Bedrock			Risk of corrosion	
	Depth	Hardness	Potential frost action	Uncoated steel	Concrete
	In				
5C2, 5C3, 5D2, 5D3---- Blair	>60	---	High----	High----	High.
8D2, 8D3, 8E, 8E2, 8G---- Hickory	>60	---	Moderate----	Moderate----	Moderate.
17A, 17B---- Keomah	>60	---	High----	High----	Moderate.
19B2, 19C2, 19C3, 19D3---- Sylvan	>60	---	High----	Moderate----	Moderate.
30F, 30G---- Hamburg	>60	---	High----	Low----	Low.
36B---- Tama	>60	---	High----	Moderate----	Moderate.
37B---- Worthen	>60	---	High----	Low----	Low.
43A, 43B---- Ipava	>60	---	High----	High----	Moderate.
46---- Herrick	>60	---	High----	High----	High.
50---- Virden	>60	---	High----	High----	Moderate.
61---- Atterberry	>60	---	High----	High----	Moderate.
75B, 75C---- Drury	>60	---	High----	Moderate----	Moderate.
119D2, 119D3---- Elco	>60	---	High----	High----	Moderate.
119E2---- Elco	>60	---	High----	Moderate----	Moderate.
242A---- Kendall	>60	---	High----	High----	Moderate.
257A, 257B---- Clarksdale	>60	---	High----	High----	Moderate.
264D3---- El Dara	>60	---	Moderate----	Low----	High.
264E, 264E2, 264G---- El Dara	>60	---	Moderate----	Moderate----	Moderate.
271C3, 271D3, 271E2---- Timula	>60	---	High----	Low----	Low.

Table 18.--Soil Features--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
				Uncoated steel	Concrete
	Depth	Hardness			
	In				
274B, 274C2, 274C3, 274D2, 274D3, 274E, 274E2, 274G----- Seaton	>60	---	High--------	Low---------	Moderate.
278A, 278B------- Stronghurst	>60	---	High--------	High--------	Moderate.
279B, 279C2, 279C3----------- Rozetta	>60	---	High--------	Moderate----	Moderate.
280B, 280C2, 280C3, 280D2, 280D3, 280E2---- Fayette	>60	---	High--------	Moderate----	Moderate.
386B, 386C2------ Downs	>60	---	High--------	Moderate----	Moderate.
403G------------- Elizabeth	4-20	Hard	Moderate----	Low---------	Low.
430B------------- Raddle	>60	---	High--------	Moderate----	Moderate.
472D2, 472E2----- Baylis	>60	---	High--------	Moderate----	High.
551E2, 551G------ Gosport	20-40	Soft	Moderate----	High--------	High.
605D2, 605D3, 605E2----------- Ursa	>60	---	Moderate----	High--------	Moderate.
606E, 606G------- Goss	>60	---	Moderate----	Moderate----	Moderate.
785G------------- Lacrescent	>60	---	Moderate----	Low---------	Low.
815-------------- Udorthents	>60	---	High--------	High--------	Moderate.
937E:					
Seaton----------	>60	---	High--------	Low---------	Moderate.
Hickory---------	>60	---	Moderate----	Moderate----	Moderate.
3028------------- Jules	>60	---	High--------	Low---------	Low.
3070, 3070L------ Beaucoup	>60	---	High--------	High--------	Low.
3071L------------ Darwin	>60	---	High--------	High--------	Low.
3092, 3092L------ Sarpy	>60	---	Low---------	Low---------	Low.

Table 18.--Soil Features--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
3302, 3302L------ Ambraw	>60	---	High--------	High--------	Moderate.
3331, 3331L------ Haymond	>60	---	High--------	Low---------	Low.
3333, 3333L------ Wakeland	>60	---	High--------	High--------	Low.
3404, 3404L------ Titus	>60	---	High--------	High--------	Low.
3415, 3415L------ Orion	>60	---	High--------	High--------	Low.
3428, 3428L------ Coffeen	>60	---	High--------	High--------	Moderate.
3475, 3475L------ Elsah	>60	---	Moderate----	Low---------	Moderate.
4070------------- Beaucoup	>60	---	High--------	High--------	Low.
7088------------- Sparta	>60	---	Low---------	Low---------	Moderate.
8070------------- Beaucoup	>60	---	High--------	High--------	Low.
8071------------- Darwin	>60	---	Moderate----	High--------	Low.
8092------------- Sarpy	>60	---	Low---------	Low---------	Low.
8180------------- Dupo	>60	---	High--------	High--------	Moderate.
8183------------- Shaffton	>60	---	Moderate----	High--------	High.
8217------------- Twomile	>60	---	High--------	High--------	High.
8284------------- Tice	>60	---	High--------	High--------	Low.
8288------------- Petrolia	>60	---	High--------	High--------	Low.
8302------------- Ambraw	>60	---	High--------	High--------	Moderate.
8331------------- Haymond	>60	---	High--------	Low---------	Low.
8333------------- Wakeland	>60	---	High--------	High--------	Low.
8341------------- Ambraw	>60	---	High--------	High--------	Moderate.

Table 18.--Soil Features--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
8395---------- Ceresco	>60	---	High--------	Low---------	Low.
8396---------- Vesser	>60	---	High--------	High--------	Moderate.
8404---------- Titus	>60	---	High--------	High--------	Low.
8415---------- Orion	>60	---	High--------	High--------	Low.
8428---------- Coffeen	>60	---	High--------	High--------	Moderate.
8451---------- Lawson	>60	---	High--------	Moderate----	Low.
8452---------- Riley	>60	---	High--------	High--------	Low.
8789:					
Ambraw----------	>60	---	High--------	High--------	Moderate.
Ceresco---------	>60	---	High--------	Low---------	Low.
Sarpy-----------	>60	---	Low---------	Low---------	Low.

Table 19.--Classification of the Soils

Soil name	Family or higher taxonomic class
Ambraw	Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic
Atterberry	Udollic Ochraqualfs, fine-silty, mixed, mesic
Baylis	Typic Hapludalfs, fine-silty, mixed, mesic
Beaucoup	Fluvaquentic Haplaquolls, fine-silty, mixed, mesic
Blair	Aquic Hapludalfs, fine-silty, mixed, mesic
Ceresco	Fluvaquentic Hapludolls, coarse-loamy, mixed, mesic
Clarksdale	Udollic Ochraqualfs, fine, montmorillonitic, mesic
Coffeen	Fluvaquentic Hapludolls, coarse-silty, mixed, mesic
Darwin	Vertic Haplaquolls, fine, montmorillonitic, mesic
Downs	Mollic Hapludalfs, fine-silty, mixed, mesic
Drury	Dystric Eutrochrepts, fine-silty, mixed, mesic
Dupo	Aquic Udifluvents, coarse-silty over clayey, mixed, nonacid, mesic
Elco	Typic Hapludalfs, fine-silty, mixed, mesic
El Dara	Typic Hapludalfs, fine-loamy, mixed, mesic
Elizabeth	Lithic Hapludolls, loamy-skeletal, mixed, mesic
Elsah	Typic Udifluvents, loamy-skeletal, mixed, nonacid, mesic
Fayette	Typic Hapludalfs, fine-silty, mixed, mesic
Gosport	Typic Dystrochrepts, fine, illitic, mesic
Goss	Typic Paleudalfs, clayey-skeletal, mixed, mesic
Hamburg	Typic Udorthents, coarse-silty, mixed (calcareous), mesic
Haymond	Typic Udifluvents, coarse-silty, mixed, nonacid, mesic
Herrick	Aquic Argiudolls, fine, montmorillonitic, mesic
Hickory	Typic Hapludalfs, fine-loamy, mixed, mesic
Ipava	Aquic Argiudolls, fine, montmorillonitic, mesic
Jules	Typic Udifluvents, coarse-silty, mixed (calcareous), mesic
Kendall	Aeric Ochraqualfs, fine-silty, mixed, mesic
Keomah	Aeric Ochraqualfs, fine, montmorillonitic, mesic
Lacrescent	Typic Hapludolls, loamy-skeletal, mixed, mesic
Lawson	Cumulic Hapludolls, fine-silty, mixed, mesic
Orion	Aquic Udifluvents, coarse-silty, mixed, nonacid, mesic
Petrolia	Typic Fluvaquents, fine-silty, mixed, nonacid, mesic
Raddle	Typic Hapludolls, fine-silty, mixed, mesic
Riley	Fluvaquentic Hapludolls, fine-loamy over sandy or sandy-skeletal, mixed, mesic
Rozetta	Typic Hapludalfs, fine-silty, mixed, mesic
Sarpy	Typic Udipsamments, mixed, mesic
Seaton	Typic Hapludalfs, fine-silty, mixed, mesic
Shaffton	Fluvaquentic Hapludolls, fine-loamy, mixed, mesic
Sparta	Entic Hapludolls, sandy, mixed, mesic
Stronghurst	Aeric Ochraqualfs, fine-silty, mixed, mesic
Sylvan	Typic Hapludalfs, fine-silty, mixed, mesic
Tama	Typic Argiudolls, fine-silty, mixed, mesic
Tice	Fluvaquentic Hapludolls, fine-silty, mixed, mesic
Timula	Typic Eutrochrepts, coarse-silty, mixed, mesic
Titus	Fluvaquentic Haplaquolls, fine, montmorillonitic, mesic
Twomile	Typic Albaqualfs, fine-silty, mixed, mesic
Udorthents	Udorthents, loamy, mixed, mesic
Ursa	Typic Hapludalfs, fine, montmorillonitic, mesic
Vesser	Argiaquic Argialbolls, fine-silty, mixed, mesic
Virden	Typic Argiaquolls, fine, montmorillonitic, mesic
Wakeland	Aeric Fluvaquents, coarse-silty, mixed, nonacid, mesic
Worthen	Cumulic Hapludolls, fine-silty, mixed, mesic

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