United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Illinois Agricultural Experiment Station

Soil Survey of White County, Illinois

How To Use This Soil Survey

General Soil Map

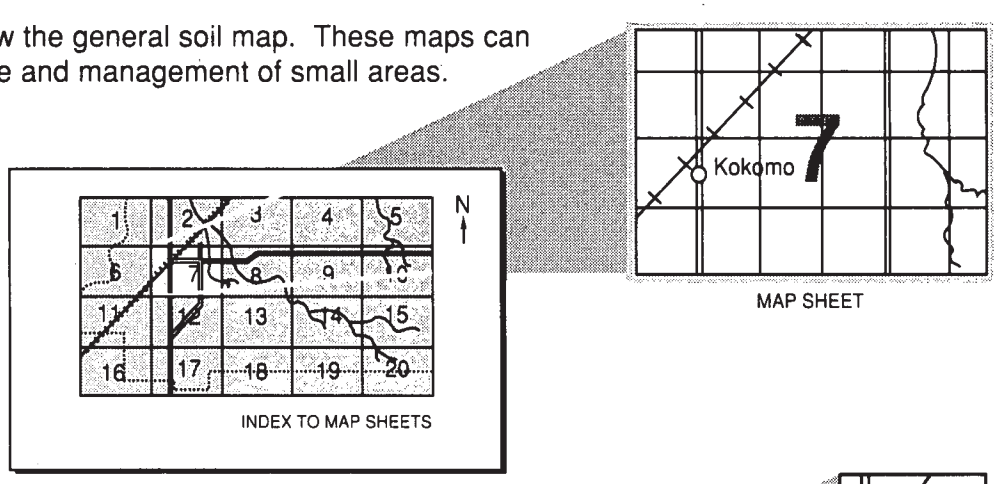
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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.

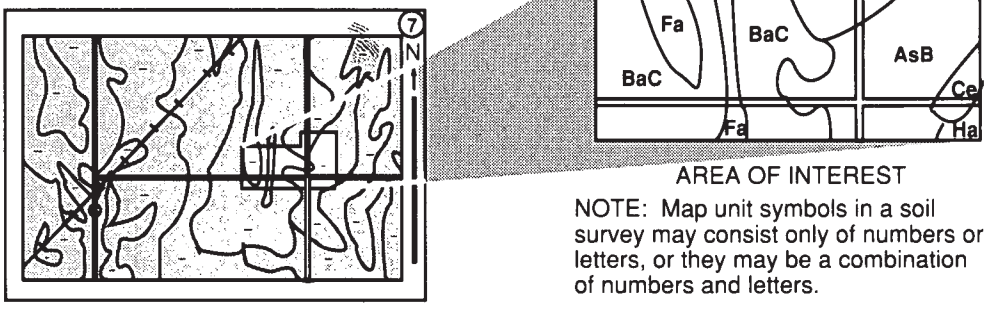
To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



INDEX TO MAP SHEETS

MAP SHEET

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



MAP SHEET

AREA OF INTEREST

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 **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **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 1989. Soil names and descriptions were approved in 1991. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1989. 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 White County Soil and Water Conservation District. The cost was shared by the White County Board and the Illinois Department of Agriculture.

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 152.

All programs of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Irrigation in an area of White County used for corn.

Contents

Index to map units v
Summary of tables viii
Foreword ix
General nature of the county 1
How this survey was made 3
Map unit composition 4
General soil map units 5
Broad land use considerations 14
Detailed soil map units 17
Soil descriptions 17
Prime farmland 93
Use and management of the soils 95
Crops and pasture 95
Woodland management and productivity 98
Windbreaks and environmental plantings 100
Recreation 100
Wildlife habitat 101
Engineering 102
Soil properties 107
Engineering index properties 107
Physical and chemical properties 108
Soil and water features 109
Classification of the soils 111
Soil series and their morphology 111
Alford series 111
Alvin series 112
Ambraw series 113
Armiesburg series 113
Ava series 114
Banlic series 114
Belknap series 115
Berks series 115
Bloomfield series 116
Bluford series 116
Bonnie series 117
Cisne series 117
Crawleyville series 118
Creal series 119
Dickinson series 119
Drury series 120
Evansville series 120
Ginat series 120
Grantsburg series 121
Harco series 122
Haymond series 122
Henshaw series 123
Hickory series 123
Hosmer series 124
Houghton series 124
Hoyleton series 125
Landes series 125
Marissa series 126
Markland series 127
McGary series 127
Meadowbank series 128
Montgomery series 129
Muren series 129
Negley series 130
Newark series 130
Newhaven series 131
Nolin series 131
Parke series 131
Patton series 132
Petrolia series 133
Piopolis series 133
Racoon series 133
Ridgway series 134
Roby series 134
Ruark series 135
Sarpy series 136
Sciotoville series 136
Sexton series 137
Sharon series 137
Skelton series 138
Springerton series 138
Stonelick series 139
Stoy series 139
Sylvan series 140
Uniontown series 140
Wakeland series 141

Weir series 141
Wellston series 142
Wynoose series 142
Zanesville series 143
Zipp series 144
Formation of the soils 145
References 149
Glossary 151
Tables 161

Issued September 1996

Index to Map Units

2—Cisne silt loam 17
3A—Hoyleton silt loam, 0 to 2 percent slopes 18
3B—Hoyleton silt loam, 2 to 5 percent slopes 18
8D2—Hickory loam, 10 to 18 percent slopes, eroded 19
8F—Hickory loam, 18 to 30 percent slopes 20
8G—Hickory loam, 30 to 50 percent slopes 20
12—Wynoose silt loam 21
13A—Bluford silt loam, 0 to 2 percent slopes 21
13B—Bluford silt loam, 2 to 5 percent slopes 22
13B2—Bluford silt loam, 2 to 5 percent slopes, eroded 22
14B—Ava silt loam, 2 to 5 percent slopes 23
14B2—Ava silt loam, 2 to 5 percent slopes, eroded 24
14C2—Ava silt loam, 5 to 10 percent slopes, eroded 24
14C3—Ava silty clay loam, 5 to 10 percent slopes, severely eroded 25
15B—Parke silt loam, 2 to 5 percent slopes 26
15C2—Parke silt loam, 5 to 10 percent slopes, eroded 26
15D2—Parke silt loam, 10 to 18 percent slopes, eroded 27
19C3—Sylvan silty clay loam, 5 to 10 percent slopes, severely eroded 28
19D3—Sylvan silty clay loam, 10 to 18 percent slopes, severely eroded 28
19F—Sylvan silt loam, 18 to 30 percent slopes 29
53B—Bloomfield fine sand, 1 to 5 percent slopes 30
53C—Bloomfield fine sand, 5 to 10 percent slopes 30
53D—Bloomfield fine sand, 10 to 18 percent slopes 31
75B—Drury silt loam, 2 to 5 percent slopes 31
87A—Dickinson fine sandy loam, 0 to 2 percent slopes 32
87B—Dickinson fine sandy loam, 2 to 5 percent slopes 32
109—Racoon silt loam 33
131A—Alvin fine sandy loam, 0 to 2 percent slopes 33
131B—Alvin fine sandy loam, 2 to 5 percent slopes 33
131C—Alvin fine sandy loam, 5 to 10 percent slopes 34
131F—Alvin fine sandy loam, 18 to 30 percent slopes 34
142—Patton silty clay loam 35
142+—Patton silt loam, overwash 35
164A—Stoy silt loam, 0 to 2 percent slopes 36
164B—Stoy silt loam, 2 to 5 percent slopes 36
165—Weir silt loam 37
173A—McGary silt loam, 0 to 2 percent slopes 37
173B2—McGary silt loam, 2 to 5 percent slopes, eroded 38
176—Marissa silt loam 38
178—Ruark loam 39
184—Roby fine sandy loam 39
208—Sexton silt loam 40
214B—Hosmer silt loam, 2 to 5 percent slopes 40
214B2—Hosmer silt loam, 2 to 5 percent slopes, eroded 41
214C2—Hosmer silt loam, 5 to 10 percent slopes, eroded 42
214C3—Hosmer silty clay loam, 5 to 10 percent slopes, severely eroded 42
231—Evansville silt loam 43
301B—Grantsburg silt loam, 2 to 5 percent slopes 43
308B—Alford silt loam, 2 to 5 percent slopes 44
308B2—Alford silt loam, 2 to 5 percent slopes, eroded 45
308C2—Alford silt loam, 5 to 10 percent slopes, eroded 45
308C3—Alford silty clay loam, 5 to 10 percent slopes, severely eroded 46
308D2—Alford silt loam, 10 to 18 percent slopes, eroded 47
308D3—Alford silty clay loam, 10 to 18 percent slopes, severely eroded 47

337—Creal silt loam 48
339F—Wellston silt loam, 18 to 30 percent slopes 48
340C2—Zanesville silt loam, 5 to 10 percent slopes, eroded 49
340C3—Zanesville silt loam, 5 to 10 percent slopes, severely eroded 50
340D2—Zanesville silt loam, 10 to 18 percent slopes, eroded 51
340D3—Zanesville silt loam, 10 to 18 percent slopes, severely eroded 51
434A—Ridgway silt loam, 0 to 2 percent slopes 52
434B—Ridgway silt loam, 2 to 5 percent slopes 53
434C2—Ridgway silt loam, 5 to 10 percent slopes, eroded 53
436A—Meadowbank silt loam, 0 to 2 percent slopes 54
436B—Meadowbank silt loam, 2 to 5 percent slopes 54
445—Newhaven loam 54
446—Springerton loam 55
453B—Muren silt loam, 2 to 5 percent slopes 55
467B2—Markland silt loam, 2 to 5 percent slopes, eroded 56
467C2—Markland silt loam, 5 to 10 percent slopes, eroded 56
467C3—Markland silty clay loam, 5 to 10 percent slopes, severely eroded 57
482B—Uniontown silt loam, 2 to 5 percent slopes 58
482B2—Uniontown silt loam, 2 to 5 percent slopes, eroded 59
482C2—Uniontown silt loam, 5 to 10 percent slopes, eroded 59
482C3—Uniontown silty clay loam, 5 to 10 percent slopes, severely eroded 60
483—Henshaw silt loam 61
484—Harco silt loam 61
585F—Negley loam, 18 to 30 percent slopes 62
750A—Skelton fine sandy loam, 0 to 2 percent slopes 62
750B—Skelton fine sandy loam, 2 to 5 percent slopes 63
750C2—Skelton fine sandy loam, 5 to 10 percent slopes, eroded 63
751—Crawleyville fine sandy loam 64
784F—Berks loam, 18 to 30 percent slopes 64
802B—Orthents, loamy, nonacid, 1 to 7 percent slopes 65
865—Pits, gravel 65
898G—Sylvan-Hickory complex, 30 to 50 percent slopes 65
929D3—Ava-Hickory complex, 10 to 18 percent slopes, severely eroded 66
1288—Petrolia silty clay loam, wet 67
3092—Sarpy sandy loam, frequently flooded 67
3103—Houghton muck, frequently flooded 68
3108—Bonnie silt loam, frequently flooded 68
3142—Patton silty clay loam, frequently flooded 69
3178—Ruark loam, frequently flooded 69
3231—Evansville silt loam, frequently flooded 70
3302—Ambraw loam, frequently flooded 70
3304—Landes sandy loam, frequently flooded 70
3331—Haymond silt loam, frequently flooded 71
3333—Wakeland silt loam, frequently flooded 71
3382—Belknap silt loam, frequently flooded 72
3420—Piopolis silty clay loam, frequently flooded 72
3465—Montgomery silty clay, frequently flooded 73
3524—Zipp silty clay, frequently flooded 73
3597—Armiesburg silty clay loam, frequently flooded 74
3601—Nolin silty clay loam, frequently flooded 74
3602—Newark silty clay loam, frequently flooded 75
3665—Stonelick loam, frequently flooded 75
7087—Dickinson fine sandy loam, rarely flooded 76
7109—Racoon silt loam, rarely flooded 76
7131A—Alvin fine sandy loam, 0 to 2 percent slopes, rarely flooded 77
7131B—Alvin fine sandy loam, 2 to 5 percent slopes, rarely flooded 77

7142—Patton silty clay loam, rarely flooded 78
7142+—Patton silt loam, overwash, rarely flooded 78
7173A—McGary silt loam, 0 to 2 percent slopes, rarely flooded 78
7173B—McGary silt loam, 2 to 5 percent slopes, eroded, rarely flooded 79
7176—Marissa silt loam, rarely flooded 79
7178—Ruark loam, rarely flooded 80
7184—Roby fine sandy loam, rarely flooded 80
7208—Sexton silt loam, rarely flooded 81
7434A—Ridgway silt loam, 0 to 2 percent slopes, rarely flooded 81
7434B—Ridgway silt loam, 2 to 5 percent slopes, rarely flooded 81
7436—Meadowbank silt loam, rarely flooded 82
7445—Newhaven loam, rarely flooded 82
7446—Springerton loam, rarely flooded 83
7462A—Sciotoville silt loam, 0 to 2 percent slopes, rarely flooded 83
7462B—Sciotoville silt loam, 2 to 5 percent slopes, rarely flooded 84
7465—Montgomery silty clay, rarely flooded 84
7467B—Markland silt loam, 2 to 5 percent slopes, eroded, rarely flooded 84
7467C—Markland silt loam, 5 to 10 percent slopes, eroded, rarely flooded 85
7482B—Uniontown silt loam, 2 to 5 percent slopes, eroded, rarely flooded 86
7482C—Uniontown silt loam, 5 to 10 percent slopes, eroded, rarely flooded 86
7483—Henshaw silt loam, rarely flooded 87
7484—Harco silt loam, rarely flooded 88
7524—Zipp silty clay, rarely flooded 88
7524+—Zipp silt loam, overwash, rarely flooded 89
7750A—Skelton fine sandy loam, 0 to 2 percent slopes, rarely flooded 89
7750B—Skelton fine sandy loam, 2 to 5 percent slopes, rarely flooded 89
7750C—Skelton fine sandy loam, 5 to 10 percent slopes, eroded, rarely flooded 90
7751—Crawleyville fine sandy loam, 0 to 2 percent slopes, rarely flooded 90
7787—Banlic silt loam, rarely flooded 91
7812E—Typic Hapludalfs, 10 to 30 percent slopes, rarely flooded 91
8072—Sharon silt loam, occasionally flooded 92
8460—Ginat silt loam, occasionally flooded 92

Summary of Tables

Temperature and precipitation (table 1) 162

Freeze dates in spring and fall (table 2) 163

Growing season (table 3) 163

Acreage and proportionate extent of the soils (table 4) 164

Prime farmland (table 5) 167

Land capability and yields per acre of crops and pasture (table 6) 169

Woodland management and productivity (table 7) 176

Windbreaks and environmental plantings (table 8) 189

Recreational development (table 9) 199

Wildlife habitat (table 10) 207

Building site development (table 11) 213

Sanitary facilities (table 12) 221

Construction materials (table 13) 229

Water management (table 14) 235

Engineering index properties (table 15) 243

Physical and chemical properties of the soils (table 16) 260

Soil and water features (table 17) 268

Classification of the soils (table 18) 275

Foreword

This soil survey contains information that can be used in land-planning programs in White County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, 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.

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.

Thomas W. Christenson
State Conservationist
Natural Resources Conservation Service

Soil Survey of White County, Illinois

By W. Scott Martin, Natural Resources Conservation Service

Soils surveyed by Bruce J. Houghtby and W. Scott Martin, Natural Resources Conservation Service, and Carol Latowski and Robert Rhynas, White County

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

WHITE COUNTY is in the southeastern part of Illinois (fig. 1). It is bounded on the east by the Wabash River, on the west by Hamilton County, on the north by Wayne and Edwards Counties, and on the south by Gallatin County. It has an area of 321,360 acres, or about 502 square miles. In 1980, the population of the county was 17,864 and that of Carmi, the county seat, was about 6,500 *(9)*.

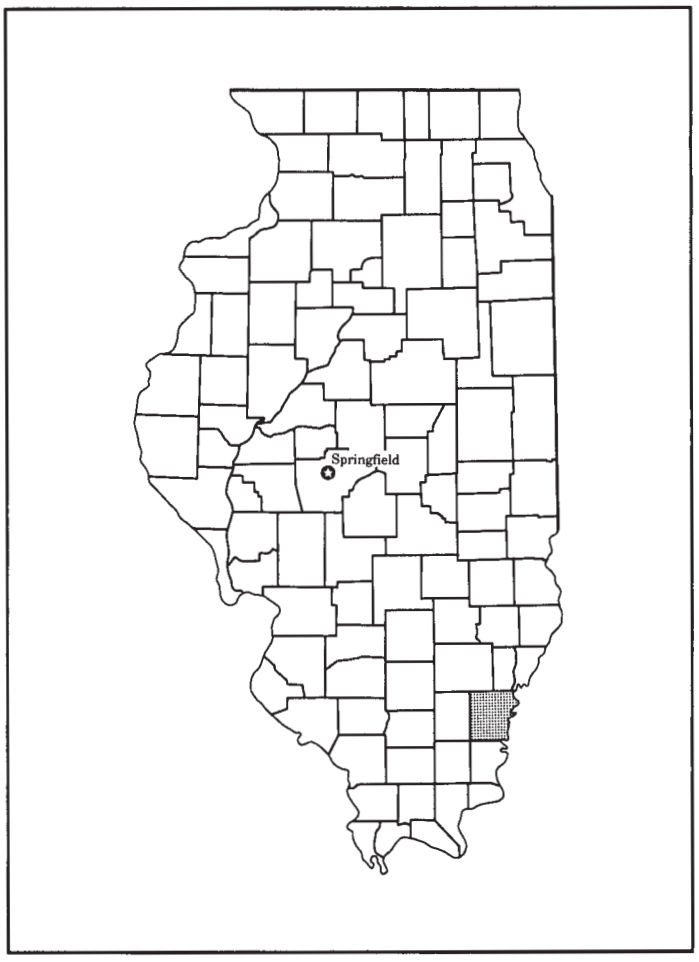


Figure 1.—Location of White County in Illinois.

General Nature of the County

This section provides general information about White County. It describes settlement and development; natural resources; physiography, relief, and drainage; and climate.

Settlement and Development

The earliest known inhabitants of the survey area were the Baumer, or Early Woodland Culture. They occupied the area about 3,000 years before settlement by Europeans. The first recorded European descendants came to the area in 1806. The early settlers encountered Indians believed to have been from the Shawnee, Kickapoo, and Pottawatomie Tribes. When the European settlers arrived, the area was a natural wilderness of rolling wooded slopes, wet wooded bottom land, wooded dunes, dry grassy prairies, and wet prairies covered with marsh grasses and sedges.

The county was named in honor of Leonard White, a

prominent Gallatin County resident. It was separated from Gallatin County in 1815 and from Hamilton County in 1821. The county seat was located at Carmi in 1821. Until 1829, the county extended northward and included Chicago. In that year, the present northern boundary of the county was established.

The expansion of agriculture prompted the formation of the White County Agricultural Board in 1879 and a county fair in 1880. Most of the population lived on small farms, though many residents depended on outside sources of income. Much of the land was seriously abused by poor farming practices as woodland and prairies were cleared and used for crop production.

The oil industry expanded rapidly in the county in the 1940's. This expansion lasted about 20 years. Revenues from the sale of petroleum gave renewed vigor to the economy, but the drilling left areas of the land damaged by saltwater spillage and poor production techniques. By 1960, oil production had decreased considerably and the county again relied on agriculture for most of its income.

During the past 20 years, agricultural production has greatly increased because of expanded mechanization and more extensive use of fertilizers and hybrids. Currently, the county is primarily an agricultural community. The farms are larger than they were in the past, and a greater percentage of the people derive their income from nonfarm sources.

Natural Resources

Soil is the main natural resource in White County. Cropland makes up about 74 percent of the total acreage in the county. Corn, soybeans, and wheat are the major crops. Secondary farm products include milo, popcorn, melons, cattle, hogs, and horses.

The soil is a renewable resource. If erosion is controlled and the fertility level maintained, cropland can remain productive. Careful planning is needed to maintain the potential for agricultural production and to limit the loss of prime farmland to other uses, such as roads, recreational and urban development, and mining.

About 6 percent of the county is woodland. The county has 2,210 acres of natural water areas and 863 acres of manmade lakes. These areas and the Wabash and Little Wabash Rivers provide habitat for wildlife and opportunities for recreation.

The subsurface natural resources in the county include oil, gas, coal, water, and sand and gravel. Oil is of major economic importance. In 1985, the county produced 2,667,902 barrels of oil. The total coal reserves in the county are estimated at 4,430,000,000 tons. There is one underground mine east of Carmi. There are no surface mines in the county. About a third of the county is underlain by sand and gravel. Most of the ground water in the county is pumped from aquifers in the deposits of sand and gravel. Gravel pits operate intermittently. The sand and gravel are used in road construction.

Physiography, Relief, and Drainage

The topography of White County consists of upland plains, terraces, lake plains, and flood plains. This landscape is the result of the action of continental glaciers in the recent geologic past and the preglacial bedrock surface. Most of the gently rolling uplands are bedrock controlled and have a mantle of Illinoian glacial till and loess. Terraces formed when the deposition of Wisconsin-aged outwash dammed river valleys, which became lakes. These lakes were filled with sediments and became lake plains. The uplands are in all areas of the county, except for the southeastern part, between the Little Wabash and Wabash Rivers. Most of the terraces are in this area. The lake plains surround the terraces, and the flood plains are adjacent to the rivers and streams. The widest flood plains are along the Wabash River.

The highest feature in the county is Boyd Hill, which reaches an altitude of about 580 feet. It is about 1 mile west of Centerville. The lowest elevation in the county is is about 340 feet. It is in the area where the Little Wabash River enters the Wabash River.

Surface water drains into the basin of the Wabash River in all areas of the county, except for the southwestern part. Bear and Indian Creeks drain into the Saline River, which is in the basin of the Ohio River.

Climate

Wayne Wendland, Illinois State Water Survey, helped prepare this section.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Fairfield in the period 1961 to 1990. 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 32.2 degrees F and the average daily minimum temperature is 23.3 degrees. The lowest temperature on record, which occurred at Fairfield on January 17, 1977, is -23 degrees. In summer, the average temperature is 74.7 degrees and the average daily maximum temperature is 86.5 degrees. The highest recorded temperature, which occurred at Fairfield on June 14, 1954, is 108 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base

temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 44.99 inches. Of this, 23.89 inches, or about 53 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 17.75 inches. The heaviest 1-day rainfall during the period of record was 6.76 inches.

The average seasonal snowfall is 15.8 inches. The greatest snow depth at any one time during the period of record was 16 inches. On the average, 22 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 62 percent. Humidity is higher at night, and the average at dawn is about 81 percent. The sun shines 74 percent of the time possible in summer and 43 percent in winter. The prevailing wind is from the south-southwest. Average windspeed is highest, 10.3 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; 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 in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil 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-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. 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 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 assure 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.

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 at the back of this publication shows the soil associations in this survey area. Each association has a distinctive pattern of soils, relief, and drainage. Each is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one association 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 association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The names of the associations on the general soil map of White County do not completely agree with those of the associations on the maps of Edwards, Gallatin, Hamilton, and Wabash Counties, Illinois, and Posey County, Indiana. Also, the lines joining the map of Edwards County do not perfectly join. Differences result from variations in the extent of the major soils. They do not affect broad land use planning because the soils are similar in terms of use and behavior.

Nearly Level to Very Steep, Well Drained to Somewhat Poorly Drained Soils on Uplands

These soils formed in loess or in loess and in the underlying silty or loamy material. The less sloping soils are used primarily for cultivated crops, and the more sloping soils are used as hayland, pasture, or woodland. Erosion is the principal hazard.

1. Alford-Sylvan Association

Gently sloping to very steep, well drained, moderately permeable, silty soils; formed in loess

This association is characterized by narrow interfluves separated by strongly sloping to very steep, dissected side slopes. Numerous short drainageways are incised into the side slopes. The drainageways join and become creeks that flow through narrow flood plains. Slopes range from 2 to 50 percent. The native vegetation consisted of hardwoods.

This association makes up about 6 percent of the county. It is about 67 percent Alford and similar soils, 11 percent Sylvan soils, and 22 percent minor soils.

The gently sloping to strongly sloping Alford soils are on knolls, interfluves, and dissected side slopes. Typically, the surface layer is brown, friable silt loam about 9 inches thick. The subsoil is about 49 inches of strong brown, friable silt loam and silty clay loam. It is mottled in the lower part. The underlying material to a depth of 60 inches is strong brown, mottled, friable silt loam.

The sloping to very steep Sylvan soils are on side slopes and at the severely eroded head of drainageways. Typically, the surface layer is dark brown, friable silt loam about 3 inches thick. The subsurface layer is brown, friable silt loam about 5 inches thick. The subsoil is about 24 inches thick. It is yellowish brown and friable. The upper part is silt loam and silty clay loam, and the lower part is calcareous silt loam. The underlying material to a depth of 60 inches is light brownish gray, mottled, friable, calcareous silt loam.

Minor in this association are Alvin, Belknap, Bloomfield, and Hickory soils. The well drained Alvin soils and the somewhat excessively drained Bloomfield soils formed in loamy or sandy eolian material and are on ridgetops and side slopes adjacent to the Alford soils. The somewhat poorly drained Belknap soils formed in silty alluvial deposits and are on flood plains. The well drained Hickory soils formed in loess and in the underlying glacial till and are on lower parts of side slopes below the Sylvan soils.

Most areas of the gently sloping and sloping soils in this association are cultivated. The steeper soils on side slopes are commonly used as woodland, pasture, or hayland. The gently sloping and sloping Alford soils are well suited or moderately suited to cultivated crops, and the sloping and strongly sloping Sylvan soils are poorly

suited. The main management concerns are controlling erosion and improving tilth.

The major soils generally are well suited to woodland and to habitat for woodland wildlife.

The gently sloping and sloping soils in this association are moderately suited to dwellings and well suited to septic tank absorption fields. The steeper areas of these soils are moderately suited, poorly suited, or generally unsuited to dwellings and septic tank absorption fields because of the slope.

2. Hosmer-Stoy Association

Nearly level to sloping, moderately well drained and somewhat poorly drained, silty soils that are moderately permeable in the upper part and very slowly permeable in the lower part or are slowly permeable; formed in loess

This association is characterized by broad flats in areas where rises and knolls and narrow interfluves are separated by sloping, dissected side slopes. Numerous drainageways cross the association. They join and become creeks that flow through narrow flood plains before reaching the major rivers on the lower lake plains and on large flood plains. Slopes range from 0 to 10 percent. The native vegetation consisted of hardwoods.

This association makes up about 7 percent of the county. It is about 69 percent Hosmer and similar soils, 15 percent Stoy and similar soils, and 16 percent minor soils.

The gently sloping and sloping, moderately well drained Hosmer soils are on knolls, narrow interfluves, and dissected side slopes. Permeability is moderate in the upper part of the profile and very slow in the lower part. Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsurface layer is yellowish brown, mottled, friable silt loam about 4 inches thick. The subsoil is firm silty clay loam about 42 inches thick. The upper part is strong brown, the next part is strong brown and has common or many silt coatings, and the lower part is strong brown, mottled, and brittle. The underlying material to a depth of 60 inches is strong brown and light yellowish brown, mottled, firm silt loam.

The nearly level and gently sloping, somewhat poorly drained, slowly permeable Stoy soils are on broad rises and knolls. Typically, the surface layer is brown, friable silt loam about 8 inches thick. The subsurface layer also is brown, friable silt loam. It is about 4 inches thick. The subsoil is mottled silty clay loam about 27 inches thick. The upper part is pale brown and friable and has many silt coatings, and the lower part is yellowish brown and is friable and firm. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable silt loam.

Minor in this association are Belknap, Hickory, Sharon, and Weir soils. The nearly level, somewhat poorly drained Belknap and moderately well drained Sharon soils formed in silty alluvial deposits and are on flood plains. The well drained Hickory soils formed in a thin layer of loess and in the underlying glacial till. They are on side slopes below the Hosmer and Stoy soils. The nearly level, poorly drained Weir soils are on broad, low flats.

Most areas of this association are cultivated. The steeper soils on side slopes are commonly used as woodland, pasture, or hayland. In most areas, the nearly level and gently sloping soils are well suited to cultivated crops and the sloping soils are moderately suited. The major soils generally are well suited to pasture and hay. Severely eroded soils are poorly suited to cultivated crops, moderately suited to pasture and hay, and well suited to woodland. The main management concerns are reducing the wetness in areas of the Stoy soils, controlling erosion in areas of the Hosmer soils and in areas of the gently sloping Stoy soils, and improving tilth in all areas of the major soils.

This association is moderately suited or poorly suited to dwellings and poorly suited to septic tank absorption fields. The wetness, the shrink-swell potential, the slow or very slow permeability, and the slope are limitations affecting these uses.

3. Ava-Bluford Association

Nearly level to strongly sloping, moderately well drained and somewhat poorly drained, silty soils that are moderately permeable in the upper part and very slowly permeable in the lower part or are slowly permeable; formed in loess and in the underlying silty or loamy material

This association is characterized by broad flats in areas where rises and knolls and narrow interfluves are separated by strongly sloping, dissected side slopes. Numerous drainageways cross the association. They join and become creeks that flow through narrow flood plains before reaching the major rivers on the lower lake plains and on large flood plains. Slopes range from 0 to 18 percent. The native vegetation consisted of hardwoods.

This association makes up about 26 percent of the county. It is about 60 percent Ava and similar soils, 21 percent Bluford and similar soils, and 19 percent minor soils.

The gently sloping to strongly sloping, moderately

well drained Ava soils are on knolls, narrow ridges, interfluves, and the upper part of dissected side slopes. Permeability is moderate in the upper part of the profile and very slow in the lower part. Typically, the surface layer is brown, friable silt loam about 8 inches thick. The subsurface layer is yellowish brown, friable silt loam about 3 inches thick. The subsoil to a depth of more than 60 inches is firm silty clay loam. The upper part is yellowish brown, the next part is yellowish brown and mottled and has many silt coatings, and the lower part is yellowish brown and light yellowish brown, mottled, and brittle.

The nearly level and gently sloping, somewhat poorly drained, slowly permeable Bluford soils are on broad flats and on ridges and side slopes. Typically, the surface layer is dark grayish brown, mottled, friable silt loam about 8 inches thick. The subsurface layer is brown and pale brown, mottled, friable silt loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. In sequence downward, it is brown, firm silty clay loam; light brownish gray, firm silty clay; brown, firm silty clay loam; and brown, firm, brittle silty clay loam.

Minor in this association are Belknap, Berks, Bonnie, Cisne, Hickory, Parke, and Wynoose soils. The somewhat poorly drained Belknap and poorly drained Bonnie soils formed in silty alluvial deposits and are on flood plains. The well drained Berks and Hickory soils are on side slopes below the Ava and Bluford soils. Berks soils formed in bedrock residuum, and Hickory soils formed in a thin layer of loess and in the underlying glacial till. The poorly drained Cisne and Wynoose soils are on broad, low flats. The well drained Parke soils are on side slopes above the Ava soils. They formed in loess and in the underlying outwash.

Most areas of this association are used for cultivated crops or for hay or pasture. In most areas, the nearly level and gently sloping soils are well suited to the cultivated crops commonly grown in the county and the sloping soils are moderately suited. The major soils generally are well suited to pasture and hay. Severely eroded soils are poorly suited to cultivated crops and moderately suited to pasture and hay. The main management concerns are reducing the wetness in areas of the Bluford soils, controlling erosion in areas of the Ava soils and in areas of the gently sloping Bluford soils, and improving tilth in all areas of the major soils.

This association is well suited to woodland and to habitat for woodland wildlife.

This association is moderately suited or poorly suited to dwellings and poorly suited to septic tank absorption fields. The wetness, the shrink-swell potential, the slow or very slow permeability, and the slope are limitations affecting these uses.

Nearly Level to Steep, Well Drained to Poorly Drained Soils on Terraces and Lake Plains

These soils formed in loamy outwash, in loess and the underlying loamy outwash, in lacustrine deposits, or in silty sediments. They are used primarily for cultivated crops. Erosion is the principal hazard, and wetness is the principal limitation.

4. Patton-Henshaw-Uniontown Association

Nearly level to sloping, poorly drained to moderately well drained, silty soils that are moderately permeable in the upper part and moderately slowly permeable in the lower part or are moderately slowly permeable; formed in lacustrine deposits or silty sediments on terraces and lake plains

This association is characterized by broad flats in areas where rises and knolls and narrow interfluves are separated by sloping, dissected side slopes. A few short drainageways are incised into areas adjacent to the major streams. Ditches have been dug in some areas to improve drainage. Slopes range from 0 to 10 percent. The native vegetation consisted of prairie grasses or hardwoods.

This association makes up about 8 percent of the county. It is about 33 percent Patton and similar soils, 31 percent Henshaw soils, 28 percent Uniontown and similar soils, and 8 percent minor soils.

The nearly level, poorly drained Patton soils are on broad, low flats and in drainageways on lake plains. They formed in lacustrine deposits. Permeability is moderate in the upper part of the profile and moderately slow in the lower part. Typically, the surface layer is very dark grayish brown, friable silty clay loam about 10 inches thick. The subsurface layer is very dark grayish brown, mottled, firm silty clay loam about 6 inches thick. The subsoil is mottled, friable silty clay loam about 32 inches thick. The upper part is dark grayish brown, the next part is grayish brown, and the lower part is gray. The underlying material to a depth of 60 inches is grayish brown, mottled, friable silty clay loam.

The nearly level, somewhat poorly drained, moderately slowly permeable Henshaw soils are on slight rises on lake plains. They formed in silty sediments. Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsurface layer is brownish yellow, very friable silt loam about 5 inches thick. The subsoil is mottled silty clay loam about 33 inches thick. The upper part is yellowish brown and is friable and firm, and the lower part is grayish brown and friable. The underlying material to a depth of 60 inches is grayish brown, mottled, friable, calcareous silty clay loam.

The gently sloping and sloping, moderately well

drained Uniontown soils are on knolls and side slopes on lake plains and terraces. They formed in silty sediments. Permeability is moderate in the upper part of the profile and moderately slow in the lower part. Typically, the surface layer is brown, friable silt loam about 9 inches thick. The subsurface layer is yellowish brown, mottled, friable silt loam about 4 inches thick. The subsoil is about 23 inches thick. It is friable. The upper part is dark yellowish brown and yellowish brown silty clay loam, and the lower part is yellowish brown, mottled silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable, calcareous silt loam.

Minor in this association are Harco, McGary, and Wakeland soils. The somewhat poorly drained Harco and McGary soils are in landscape positions similar to those of the Henshaw soils. Harco soils have a thick, dark surface layer. The somewhat poorly drained Wakeland soils formed in silty alluvial deposits and are on flood plains.

Most areas of this association are cultivated. Some areas of the Uniontown soils are used as hayland, pasture, woodland wildlife habitat, or woodland. The Henshaw and Patton soils and the gently sloping Uniontown soils are well suited to cultivated crops, and the sloping Uniontown soils are moderately suited or poorly suited. The Uniontown soils are well suited or moderately suited to pasture and hay. The main management concerns are reducing the wetness in areas of the Henshaw and Patton soils, controlling erosion in areas of the Uniontown soils, and improving tilth in areas of the Henshaw and Uniontown soils.

The Uniontown soils are well suited to woodland wildlife habitat and to woodland.

The Patton soils are generally unsuited to dwellings and septic tank absorption fields because of the hazard of ponding. The Henshaw soils are poorly suited to dwellings, and the Uniontown soils are well suited or moderately suited. The seasonal high water table is the major limitation. The Henshaw soils are poorly suited to septic tank absorption fields, and the Uniontown soils are moderately suited. The seasonal high water table and the restricted permeability are the major limitations.

5. Alvin-Ruark-Roby Association

Nearly level to steep, well drained, poorly drained, and somewhat poorly drained, loamy soils that are moderately permeable in the upper part and moderately rapidly permeable in the lower part or are moderately slowly permeable; formed in outwash deposits on terraces and lake plains

This association is characterized by broad, low flats, slight rises, ridges, and side slopes. Sandy dunes are in scattered areas. Very few drainageways cross the association, and most of the drainage is internal. Slopes range from 0 to 30 percent. The native vegetation consisted of hardwoods.

This association makes up about 2 percent of the county. It is about 55 percent Alvin soils, 12 percent Ruark soils, 10 percent Roby soils, and 23 percent minor soils.

The nearly level to steep, well drained Alvin soils are on slight rises, broad flats, ridges, and side slopes on terraces. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Typically, the surface layer is brown, friable fine sandy loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark yellowish brown, friable fine sandy loam; the next part is brown and strong brown, friable sandy loam; and the lower part occurs as alternating bands of strong brown, loose sand and strong brown, very friable loamy sand.

The nearly level, poorly drained, moderately slowly permeable Ruark soils are on broad, low flats and in drainageways on terraces and lake plains. Typically, the surface layer is brown, friable loam about 8 inches thick. The subsurface layer is light brownish gray, mottled, friable loam about 11 inches thick. The subsoil is about 40 inches thick. It is mottled and firm. The upper part is light brownish gray and light gray clay loam, and the lower part is light gray loam. The underlying material to a depth of 60 inches is light gray, mottled, friable sandy loam.

The nearly level, somewhat poorly drained Roby soils are on broad rises on terraces and lake plains. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Typically, the surface layer is brown, friable fine sandy loam about 9 inches thick. The subsurface layer is dark yellowish brown, mottled, friable loamy sand about 4 inches thick. The subsoil is mottled, friable sandy loam about 22 inches thick. The upper part is yellowish brown, and the lower part is brown. The underlying material to a depth of 60 inches is mottled. The upper part is brown, very friable loamy sand, and the lower part is strong brown, loose sand.

Minor in this association are Bloomfield, Dickinson, and Springerton soils. The somewhat excessively drained Bloomfield soils are on dunes. The somewhat excessively drained Dickinson soils are on broad rises and knolls. They have a dark surface layer. The poorly drained Springerton soils are on broad, low flats and in drainageways. They have a dark surface layer.

Most areas of this association are cultivated. The nearly level and gently sloping soils are well suited to cultivated crops, and the sloping soils are moderately suited. The Alvin and Roby soils are well suited to hay

and pasture, and the Ruark soils are moderately suited. The main management concerns are controlling erosion in sloping areas of the Alvin soils, reducing droughtiness and the hazard of soil blowing in areas of the Alvin and Roby soils, and reducing the wetness in areas of the Ruark soils.

The major soils are well suited to habitat for openland wildlife.

The nearly level to sloping Alvin soils are well suited to dwellings and septic tank absorption fields. Because of ponding and the seasonal high water table, the Ruark soils are generally unsuited to dwellings and septic tank absorption fields and the Roby soils are poorly suited.

6. Ridgway-Meadowbank Association

Nearly level to sloping, well drained, silty soils that are moderately permeable in the upper part and rapidly permeable in the lower part; formed in loess and the underlying outwash deposits on terraces

This association is characterized by broad rises and knolls. Sandy dunes are in scattered areas. Very few drainageways cross the association, and most of the drainage is internal. Slopes range from 0 to 10 percent. The native vegetation consisted of hardwoods or prairie grasses.

This association makes up about 2 percent of the county. It is about 43 percent Ridgway soils, 29 percent Meadowbank soils, and 28 percent minor soils.

The nearly level to sloping Ridgway soils are on broad rises and on ridges and side slopes. Typically, the surface layer is dark grayish brown, friable silt loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is brown, dark yellowish brown, and yellowish brown, friable and firm silty clay loam; yellowish brown, friable clay loam; strong brown, very friable sandy loam; and alternating bands of yellowish brown, loose loamy sand and brown, very friable sandy loam.

The nearly level and gently sloping Meadowbank soils are on broad rises and knolls. Typically, the surface soil is very dark brown and very dark grayish brown, friable silt loam about 19 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is dark yellowish brown, friable and firm silty clay loam; brown, firm loam; strong brown, friable sandy loam; and alternating bands of light yellowish brown, loose sand and strong brown and yellowish brown, very friable loamy sand and sandy loam.

Minor in this association are Bloomfield, Dickinson, Newhaven, and Sexton soils. The somewhat excessively drained Bloomfield soils are on dunes and side slopes. The somewhat excessively drained Dickinson soils are on slight rises, broad flats, and knolls. The somewhat poorly drained Newhaven soils are on slight rises. The poorly drained Sexton soils are on broad, low flats.

Most areas of this association are cultivated. The nearly level and gently sloping soils are well suited to the cultivated crops commonly grown in the county, and the sloping soils are moderately suited. The major soils are well suited to pasture and hay. The main management concerns are controlling erosion and reducing droughtiness.

The major soils are well suited to habitat for openland wildlife.

Because of the shrink-swell potential, the major soils are only moderately suited to dwellings. They are well suited to septic tank absorption fields.

7. Skelton-Ruark Association

Nearly level to sloping, well drained and poorly drained, loamy soils that are moderately permeable in the upper part and moderately rapidly permeable in the lower part or are moderately slowly permeable; formed in outwash deposits on terraces and lake plains

This association is characterized by broad, low flats, slight rises, ridges, and side slopes. Sandy dunes are in scattered areas. Most of the drainage in the association is internal. Ditches have been dug in some areas to improve drainage. Slopes range from 0 to 10 percent. The native vegetation consisted of hardwoods.

This association makes up about 2 percent of the county. It is about 41 percent Skelton and similar soils, 36 percent Ruark soils, and 23 percent minor soils.

The nearly level to sloping, well drained Skelton soils are on broad rises, broad flats, ridges, and side slopes. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Typically, the surface layer is brown, friable fine sandy loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is strong brown, friable clay loam; the next part is strong brown, friable sandy loam; and the lower part occurs as alternating bands of yellowish brown, loose loamy sand and dark yellowish brown, very friable sandy loam.

The nearly level, poorly drained, moderately slowly permeable Ruark soils are on broad, low flats and in drainageways. Typically, the surface layer is brown, friable loam about 8 inches thick. The subsurface layer is light brownish gray, mottled, friable loam about 11 inches thick. The subsoil is about 40 inches thick. It is mottled and firm. The upper part is light brownish gray and light gray clay loam, and the lower part is light gray loam. The underlying material to a depth of 60 inches is light gray, mottled, friable sandy loam.

Minor in this association are Crawleyville, Sexton, and Springerton soils. The somewhat poorly drained Crawleyville soils are on broad rises above the Ruark soils. The poorly drained Sexton and Springerton soils are in landscape positions similar to those of the Ruark soils. Sexton soils have less sand in the subsoil than the major soils. Springerton soils have a thick, dark surface layer.

Most areas of this association are cultivated. The nearly level and gently sloping Skelton soils are well suited to cultivated crops, and the sloping Skelton soils and the Ruark soils are moderately suited. The major soils are well suited to hay and pasture. The main management concerns are controlling erosion in areas of the gently sloping and sloping Skelton soils and reducing the wetness in areas of the Ruark soils.

The Skelton soils are moderately suited to dwellings and septic tank absorption fields. The shrink-swell potential and the restricted permeability are limitations affecting these uses. The Ruark soils are generally unsuited to dwellings and septic tank absorption fields because of the hazard of ponding.

Nearly Level to Sloping, Very Poorly Drained, Poorly Drained, Somewhat Poorly Drained, and Well Drained Soils That Are Subject to Flooding; on Lake Plains and Terraces

These soils formed in silty and clayey lacustrine deposits, silty sediments, or loamy outwash deposits. They are used primarily for cultivated crops. Wetness is the principal limitation, and flooding is the major hazard.

8. Zipp-Patton Association

Nearly level, very poorly drained and poorly drained, clayey and silty soils that are slowly permeable or are moderately permeable in the upper part and moderately slowly permeable in the lower part; formed in lacustrine deposits on lake plains

This association is characterized by broad, low flats. A few short drainageways are incised into areas adjacent to the major streams. Ditches have been dug in some areas to improve drainage. Slopes range from 0 to 2 percent. The native vegetation consisted of hardwoods or prairie grasses.

This association makes up about 5 percent of the county. It is about 47 percent Zipp and similar soils, 27 percent Patton and similar soils, and 26 percent minor soils.

The very poorly drained, slowly permeable, clayey Zipp soils are on broad, low flats. Typically, the surface layer is dark grayish brown, firm silty clay about 8 inches thick. The subsoil is light gray and gray, mottled, firm silty clay about 40 inches thick. The underlying material to a depth of 60 inches is light gray, mottled, firm silty clay.

The poorly drained, silty Patton soils are on broad, low flats and in drainageways. Permeability is moderate in the upper part of the profile and moderately slow in the lower part. Typically, the surface layer is very dark grayish brown, friable silty clay loam about 10 inches thick. The subsurface layer is very dark grayish brown, mottled, firm silty clay loam about 6 inches thick. The subsoil is mottled, friable silty clay loam about 32 inches thick. The upper part is dark grayish brown, the next part is grayish brown, and the lower part is gray. The underlying material to a depth of 60 inches is grayish brown, mottled, friable silty clay loam.

Minor in this association are Henshaw, McGary, and Piopolis soils. The somewhat poorly drained Henshaw and McGary soils are on slight rises above the Zipp and Patton soils. The poorly drained Piopolis soils are on flood plains along Skillet Fork.

Most areas of this association are cultivated. The Patton soils are well suited to cultivated crops, and the Zipp soils are moderately suited. The main management concerns are reducing the wetness and the hazard of flooding in all areas of the major soils and improving tilth in areas of the Zipp soils.

This association is generally unsuited to dwellings and septic tank absorption fields because of the hazard of flooding and the wetness.

9. Patton-Henshaw Association

Nearly level, poorly drained and somewhat poorly drained, silty soils that are moderately permeable in the upper part and moderately slowly permeable in the lower part or are moderately slowly permeable; formed in lacustrine deposits or silty sediments on lake plains

This association is characterized by broad, low flats and broad rises. A few short drainageways are incised into areas adjacent to the major streams. Ditches have been dug in some areas to improve drainage. Slopes range from 0 to 2 percent. The native vegetation consisted of prairie grasses or hardwoods.

This association makes up about 4 percent of the county. It is about 42 percent Patton and similar soils, 32 percent Henshaw soils, and 26 percent minor soils.

The poorly drained Patton soils are on broad, low flats. They formed in lacustrine deposits. Permeability is moderate in the upper part of the profile and moderately slow in the lower part. Typically, the surface layer is very dark grayish brown, friable silty clay loam about 10 inches thick. The subsurface layer is very dark grayish brown, mottled, firm silty clay loam about 6 inches thick. The subsoil is mottled, friable silty clay loam about 32 inches thick. The upper part is dark grayish brown, the

next part is grayish brown, and the lower part is gray. The underlying material to a depth of 60 inches is grayish brown, mottled, friable silty clay loam.

The somewhat poorly drained, moderately slowly permeable Henshaw soils are on broad rises. They formed in silty sediments. Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsurface layer is brownish yellow, very friable silt loam about 5 inches thick. The subsoil is mottled silty clay loam about 33 inches thick. The upper part is yellowish brown and is friable and firm, and the lower part is grayish brown and friable. The underlying material to a depth of 60 inches is grayish brown, mottled, friable, calcareous silty clay loam.

Minor in this association are Harco, Ridgway, and Uniontown soils. The somewhat poorly drained Harco soils are on slight rises. They have a thick, dark surface layer. The well drained Ridgway soils and the moderately well drained Uniontown soils are on broad rises and on ridges and side slopes.

Most areas of this association are cultivated. The major soils are well suited to cultivated crops and to hay and pasture. The main management concerns are reducing the wetness and the hazard of flooding in all areas of the major soils and improving tilth in areas of the Henshaw soils.

Because of the hazard of flooding and the wetness, this association is generally unsuited to dwellings. It is generally unsuited or poorly suited to septic tank absorption fields because of the hazard of ponding, the wetness, and the restricted permeability.

10. Montgomery-Zipp-McGary Association

Nearly level and gently sloping, very poorly drained and somewhat poorly drained, slowly permeable, clayey and silty soils; formed in lacustrine deposits on lake plains

This association is characterized by broad, low flats, slight rises, and side slopes. A few short drainageways are incised into areas adjacent to the major streams. Ditches have been dug in some areas to improve drainage. Slopes range from 0 to 5 percent. The native vegetation consisted of hardwoods or prairie grasses.

This association makes up about 5 percent of the county. It is about 25 percent Montgomery soils, 23 percent Zipp soils, 22 percent McGary soils, and 30 percent minor soils.

The nearly level, very poorly drained, clayey Montgomery soils are on broad, low flats and in shallow depressions. Typically, the surface soil is very dark gray, firm silty clay about 14 inches thick. It is mottled in the lower part. The subsoil is about 43 inches thick. It is mottled. The upper part is very dark grayish brown and dark grayish brown, firm silty clay; the next part is olive gray, firm silty clay; and the lower part is grayish brown, friable, calcareous silty clay loam. The underlying material to a depth of 60 inches is light gray, mottled, friable, calcareous silty clay loam.

The nearly level, very poorly drained, clayey Zipp soils are on broad, low flats. Typically, the surface layer is dark grayish brown, firm silty clay about 8 inches thick. The subsoil is light gray and gray, mottled, firm silty clay about 40 inches thick. The underlying material to a depth of 60 inches is light gray, mottled, firm silty clay.

The nearly level and gently sloping, somewhat poorly drained, silty McGary soils are on broad rises and on the side slopes of drainageways. Typically, the surface layer is grayish brown, friable silt loam about 8 inches thick. The subsoil is mottled, firm silty clay about 31 inches thick. The upper part is brown, and the lower part is grayish brown and light brownish gray. The underlying material to a depth of 60 inches is light olive brown and yellowish brown, mottled, firm, calcareous silty clay loam.

Minor in this association are Markland and Sexton soils. The well drained Markland soils are on the side slopes of drainageways and escarpments. The poorly drained Sexton soils are on broad, low flats. They have a silty surface layer.

Most areas of this association are cultivated. The nearly level McGary soils are well suited to cultivated crops, and the Zipp and Montgomery soils and the gently sloping McGary soils are moderately suited. The main management concerns are reducing the wetness and the hazard of flooding and improving tilth in all areas of the major soils and controlling erosion in areas of the gently sloping McGary soils.

The Montgomery and Zipp soils are generally unsuited to dwellings and septic tank absorption fields because of the hazards of ponding and flooding. The McGary soils are generally unsuited to dwellings because of the hazard of flooding. They are poorly suited to septic tank absorption fields because of the wetness and the restricted permeability.

11. Skelton-Ruark-Crawleyville Association

Nearly level to sloping, well drained, poorly drained, and somewhat poorly drained, loamy soils that are moderately permeable in the upper part and moderately rapidly permeable in the lower part or are moderately slowly permeable or moderately permeable; formed in outwash deposits on terraces and lake plains

This association is characterized by broad, low flats, broad rises, ridges, and side slopes. Sandy dunes are in scattered areas. Most of the drainage in the association is internal. Ditches have been dug in some

areas to improve drainage. Slopes range from 0 to 10 percent. The native vegetation consisted of hardwoods.

This association makes up about 7 percent of the county. It is about 30 percent Skelton and similar soils, 27 percent Ruark and similar soils, 20 percent Crawleyville and similar soils, and 23 percent minor soils.

The nearly level to sloping, well drained Skelton soils are on slight rises, broad flats, ridges, and side slopes on terraces and lake plains. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Typically, the surface layer is brown, friable fine sandy loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is strong brown, friable clay loam; the next part is strong brown, friable sandy loam; and the lower part occurs as alternating bands of yellowish brown, loose loamy sand and dark yellowish brown, very friable sandy loam.

The nearly level, poorly drained, moderately slowly permeable Ruark soils are on broad, low flats and in drainageways on terraces and lake plains. Typically, the surface layer is brown, friable loam about 8 inches thick. The subsurface layer is light brownish gray, friable loam about 11 inches thick. The subsoil is about 40 inches thick. It is mottled and firm. The upper part is light brownish gray and gray clay loam, and the lower part is gray loam. The underlying material to a depth of 60 inches is light gray, mottled, friable sandy loam.

The nearly level, somewhat poorly drained, moderately permeable Crawleyville soils are on broad rises on terraces. Typically, the surface layer is brown, very friable fine sandy loam about 10 inches thick. The subsurface layer is brown, mottled, very friable fine sandy loam about 5 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. The upper part is brown, friable loam; the next part is grayish brown, firm clay loam; and the lower part is grayish brown, firm loam.

Minor in this association are Bloomfield, Marissa, Meadowbank, Newhaven, and Springerton soils. The somewhat excessively drained Bloomfield soils are on dunes and side slopes. The somewhat poorly drained Marissa and Newhaven soils, the well drained Meadowbank soils, and the poorly drained Springerton soils have a thick, dark surface layer. Marissa and Springerton soils are on broad, low flats and in drainageways, and Meadowbank and Newhaven soils are on broad rises.

Most areas of this association are cultivated. The Crawleyville soils and the nearly level and gently sloping Skelton soils are well suited to cultivated crops, and the sloping Skelton soils and the Ruark soils are moderately suited. The major soils are well suited to hay and pasture. The main management concerns are controlling erosion in areas of the gently sloping and sloping Skelton soils, reducing the wetness in areas of the Crawleyville and Ruark soils, and controlling flooding in all areas of the major soils.

This association is generally unsuited to dwellings because of the seasonal wetness of the Ruark soils and the hazard of flooding on all of the major soils. The Skelton soils are only moderately suited to septic tank absorption fields because of the hazard of flooding and the restricted permeability. Because of the wetness, the Crawleyville soils are poorly suited to septic tank absorption fields and the Ruark soils are generally unsuited.

12. Alvin-Ruark Association

Nearly level and gently sloping, well drained and poorly drained, loamy soils that are moderately permeable in the upper part and moderately rapidly permeable in the lower part or are moderately slowly permeable; formed in outwash deposits on terraces and lake plains

This association is characterized by broad, low flats and broad rises. Sandy ridges are in scattered areas. Very few drainageways cross the association, and most of the drainage is internal. Slopes range from 0 to 5 percent. The native vegetation consisted of hardwoods.

This association makes up about 3 percent of the county. It is about 44 percent Alvin and similar soils, 17 percent Ruark and similar soils, and 39 percent minor soils.

The nearly level and gently sloping, well drained Alvin soils are on slight rises, broad flats, ridges, and side slopes on terraces. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Typically, the surface layer is brown, friable fine sandy loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark yellowish brown, friable fine sandy loam; the next part is brown and strong brown, friable sandy loam; and the lower part occurs as alternating bands of strong brown, loose sand and strong brown, very friable loamy sand.

The nearly level, poorly drained, moderately slowly permeable Ruark soils are on broad, low flats and in drainageways on terraces and lake plains. Typically, the surface layer is brown, friable loam about 8 inches thick. The subsurface layer is light brownish gray, mottled, friable loam about 11 inches thick. The subsoil is about 40 inches thick. It is mottled and firm. The upper part is light brownish gray and light gray clay loam, and the lower part is light gray loam. The underlying material to a depth of 60 inches is light gray, mottled, friable sandy loam.

Minor in this association are Bloomfield, Crawleyville, Dickinson, and Roby soils. The somewhat excessively drained Bloomfield soils are on ridges and side slopes above the Alvin and Ruark soils. The somewhat poorly drained Crawleyville and Roby soils are on broad rises above the Ruark soils. The somewhat excessively drained Dickinson soils are in landscape positions similar to those of the Alvin soils. They have a thick, dark surface layer.

In most areas this association is cultivated. It is moderately suited to the cultivated crops commonly grown in the county. The major soils are well suited or moderately suited to hay and pasture. The main management concerns are controlling soil blowing and flooding on the Alvin soils, controlling erosion on the sloping Alvin soils, and reducing the wetness and the hazard of flooding in areas of the Ruark soils.

This association is generally unsuited to dwellings because of the wetness of the Ruark soils and the hazard of flooding on both of the major soils. The Alvin soils are only moderately suited to septic tank absorption fields because of the hazard of flooding. Because of the hazards of ponding and flooding, the Ruark soils are generally unsuited to septic tank absorption fields.

Nearly Level and Gently Sloping, Well Drained to Very Poorly Drained Soils on Flood Plains

These soils formed in silty alluvial deposits. They are used primarily for cultivated crops. Some of the wetter areas are used as woodland. Wetness is the principal limitation, and flooding is the major hazard.

13. Armiesburg-Petrolia-Nolin Association

Nearly level, well drained and very poorly drained, moderately permeable and moderately slowly permeable, silty soils; formed in alluvial deposits

This association is on slight rises and in sloughs on the flood plain along the Wabash River. In some areas short, steep slopes are between the well drained soils on rises and the poorly drained soils in sloughs. A few areas are protected from flooding by levees. Slopes range from 0 to 2 percent. The native vegetation consisted of prairie grasses or hardwoods.

This association makes up about 10 percent of the county. It is about 26 percent Armiesburg and similar soils, 22 percent Petrolia and similar soils, 20 percent Nolin and similar soils, and 32 percent minor soils.

The well drained, moderately permeable Armiesburg soils are on rises. Typically, the surface soil is very dark grayish brown, friable silty clay loam about 21 inches thick. The subsoil to a depth of 60 inches is brown and dark yellowish brown, friable silty clay loam.

The very poorly drained, moderately slowly permeable Petrolia soils are in sloughs. Typically, the surface layer is very dark grayish brown, firm silty clay loam about 6 inches thick. The underlying material to a depth of 60 inches is mottled silty clay loam and silt loam. The upper part is dark grayish brown and firm, and the lower part is gray and friable.

The well drained, moderately permeable Nolin soils are on rises. Typically, the surface layer is brown, friable silty clay loam about 9 inches thick. The subsoil is dark yellowish brown, friable silty clay loam about 42 inches thick. The underlying material to a depth of 60 inches is dark yellowish brown silt loam.

Minor in this association are Landes, Newark, and Stonelick soils. The well drained Landes and Stonelick soils formed in recent loamy alluvium and are on broad rises. Stonelick soils are calcareous. The somewhat poorly drained Newark soils are in sloughs.

Most areas of this association are cultivated. A few areas, including most areas of the Petrolia soils, are used as woodland. The Armiesburg and Nolin soils are well suited to cultivated crops, but the Petrolia soils are generally unsuited because of the wetness and the flooding.

The major soils generally are well suited to woodland and have good or fair potential for woodland wildlife habitat. The main management concerns are controlling flooding in all areas of the major soils and reducing the wetness in the sloughs.

This association is generally unsuited to dwellings and septic tank absorption fields because of the wetness of the Petrolia soils and the hazard of flooding on all of the major soils.

14. Sciotoville-Ginat Association

Nearly level and gently sloping, moderately well drained and poorly drained, silty soils that are moderately permeable in the upper part and slowly permeable or very slowly permeable in the lower part; formed in alluvial deposits

This association is on broad, low flats and slight rises on the flood plain along the Little Wabash River. A few short drainageways are incised into areas adjacent to the river. Slopes range from 0 to 5 percent. The native vegetation consisted of hardwoods.

This association makes up about 2 percent of the county. It is about 45 percent Sciotoville soils, 24 percent Ginat soils, and 31 percent minor soils.

The nearly level and gently sloping, moderately well drained Sciotoville soils are on slight rises. Permeability is moderate in the upper part of the profile and slow in the lower part. Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsurface

layer is brown, mottled, friable silt loam about 14 inches thick. The subsoil is about 33 inches thick. It is mottled. The upper part is pale brown, friable silt loam; the next part is pale brown, firm silt loam that has many silt coatings; and the lower part is pale brown and brown, firm, brittle silty clay loam. The underlying material to a depth of 60 inches is pale brown, mottled, firm silt loam.

The nearly level, poorly drained Ginat soils are on broad, low flats. Permeability is moderate in the upper part of the profile and very slow in the lower part. Typically, the surface layer is dark grayish brown, friable silt loam about 6 inches thick. The subsurface layer is dark grayish brown and light brownish gray, mottled, friable silt loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. The upper part is light brownish gray, firm silt loam, and the lower part is grayish brown, firm, brittle silty clay loam.

Minor in this association are Bonnie, Petrolia, and Skelton soils. The poorly drained Bonnie soils and the very poorly drained Petrolia soils formed in recent alluvium adjacent to the Little Wabash River. The well drained Skelton soils are on ridges and side slopes.

Most areas of this association are cultivated. A few areas are used as woodland. The major soils are well suited or moderately suited to the cultivated crops commonly grown in the county. They are well suited to hay and pasture. The main management concerns are reducing the wetness in areas of the Ginat soils, controlling erosion in areas of the gently sloping Sciotoville soils, and controlling flooding and improving tilth in all areas of the major soils.

This association is generally unsuited to dwellings because of the wetness and the hazard of flooding. The Sciotoville soils are poorly suited to septic tank absorption fields because of the wetness and the restricted permeability, and the Ginat soils are generally unsuited because of the hazard of flooding.

15. Bonnie-Belknap Association

Nearly level, poorly drained and somewhat poorly drained, moderately slowly permeable and moderately permeable, silty soils; formed in alluvial deposits

This association is on slight rises and low flats on flood plains along minor creeks and drainageways. Slopes range from 0 to 2 percent. The native vegetation consisted of hardwoods.

This association makes up about 11 percent of the county. It is about 57 percent Bonnie and similar soils, 40 percent Belknap and similar soils, and 3 percent minor soils.

The poorly drained, moderately slowly permeable Bonnie soils are on low flats. Typically, the surface layer is grayish brown and dark grayish brown, mottled, friable silt loam about 5 inches thick. The underlying material is mottled, friable silt loam about 49 inches thick. The upper part is grayish brown, and the lower part is light brownish gray. Below this to a depth of 60 inches is a buried soil of grayish brown, mottled, friable silty clay loam.

The somewhat poorly drained, moderately permeable Belknap soils are on slight rises. Typically, the surface layer is brown, friable silt loam about 7 inches thick. The underlying material to a depth of 60 inches is mottled, friable silt loam. The upper part is yellowish brown, the next part is light brownish gray, and the lower part is light gray.

Minor in this association are Banlic, Haymond, and Sharon soils. The somewhat poorly drained, slowly permeable Banlic soils are on low foot slopes adjacent to the uplands and on slight rises on the flood plains. The well drained Haymond soils and the moderately well drained Sharon soils are on narrow flood plains and on natural levees adjacent to creeks.

In most areas this association is cultivated or wooded. It is moderately suited or well suited to cultivated crops. The main management concerns are reducing the wetness and the hazard of flooding and improving tilth.

The major soils are well suited to woodland. They have good or fair potential for woodland wildlife habitat.

This association is generally unsuited to dwellings and septic tank absorption fields because of the wetness and the hazard of flooding.

Broad Land Use Considerations

The soils in White County vary widely in their suitability for major land uses. Most of the acreage in the county is used for cultivated crops, dominantly corn, soybeans, and wheat. Other uses include pasture, woodland, building site development, and wildlife habitat.

Erosion is the main hazard on the cropland in areas of associations 1, 2, and 3. Droughtiness is a major management concern in areas of associations 5 and 12. Wetness is a limitation in some of the major soils in associations 4 and 5 and in associations 7 to 15. Associations 8, 13, 14, and 15 also are subject to flooding, mainly in winter and early spring. Floodwater delays planting and occasionally causes slight or moderate crop damage.

Several thousand acres in White County are used as pasture or woodland. Much of this acreage is in associations 1, 2, 3, and 13. The highest acreage is in association 1. The suitability for trees is good in all of the associations. Because of seasonal wetness or the

slope, the equipment limitation is moderate or severe in some areas. It can be overcome by harvesting during the drier periods of the year or by using special equipment or logging techniques.

Various limitations affect the use of the soils in the county for building site development. Generally, the nearly level and gently sloping, moderately well drained and well drained soils in associations 1, 4, 5, 6, and 7 are better sites for dwellings than the other soils in the county. In areas of associations 2 and 3 and in areas of the somewhat poorly and poorly drained soils in associations 4 and 7, the wetness, the potential for frost action, and the shrink-swell potential limit building site development. Associations 8 to 15 generally are not suitable for building site development because of the hazard of flooding.

On many of the building sites in the rural areas of White County, private sewage disposal systems are used. Alford, Alvin, Meadowbank, Ridgway, Skelton, and Sylvan soils, which are mainly in associations 1, 5, 6, and 7, are suitable as sites for septic tank absorption fields. On the other major soils in these associations and in the rest of the associations, seasonal wetness is the major limitation. On some building sites where the water table cannot be sufficiently lowered, alternative waste disposal systems are needed.

The suitability for recreational uses in the county ranges from good to poor, depending on the soil and the intensity of the expected use. The major soils in associations 1 and 6 and the well drained soils in associations 5 and 7 have good potential for recreational development where slopes are less than 10 percent. In areas of these associations where slopes are more than 10 percent, recreational uses are limited by the slope and the hazard of erosion. The other major soils in associations 5 and 7 and the major soils in associations 2, 3, and 4 are poorly suited to some recreational uses because of seasonal wetness or slow or very slow permeability. Associations 8 to 15 are poorly suited to many recreational uses because of the hazard of flooding. All of the associations are suitable for such recreational uses as paths and trails for hiking or horseback riding.

The suitability for the development of selected kinds of wildlife habitat is good throughout the county. The major soils in associations 1 to 7 and in associations 9 to 12 are suitable for openland and woodland wildlife habitat. The major soils in associations 8, 13, 14, and 15 are suitable for wetland wildlife habitat.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of 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 on each map unit, or soil, 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 underlying material, 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 underlying material. 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, Ava silt loam, 2 to 5 percent slopes, eroded, is a phase of the Ava 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. Ava-Hickory complex, 10 to 18 percent slopes, severely eroded, 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, gravel, 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 "Summary of Tables") 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.

Soil Descriptions

2—Cisne silt loam. This nearly level, poorly drained soil is on low, broad flats and in depressions on uplands. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 7 inches thick. The subsurface layer is grayish brown, mottled, friable silt loam about 4 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. The upper part is light brownish gray, friable and firm silty clay loam; the next part is light brownish gray, firm silt loam; and the lower part is light gray, firm silty clay loam. In some areas the surface layer is lighter colored. In other areas the subsoil has less clay and more silt.

Included with this soil in mapping are small areas of Bluford, Hoyleton, and Racoon soils. Bluford and Hoyleton soils are somewhat poorly drained and are slightly higher on the landscape than the Cisne soil. Also, Bluford soils have a lighter colored surface layer and have brittle layers in the lower part of the subsoil. Racoon soils are subject to ponding and are lower on

the landscape than the Cisne soil. Also, they have a lighter colored surface layer. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Cisne soil at a very slow rate. Surface runoff is slow. A perched seasonal high water table is within a depth of 2 feet from February through June in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are high in the subsoil.

Most areas are cultivated. This soil is moderately suited to cultivated crops and poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The seasonal wetness is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal wetness and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons and mounds are alternative methods of waste disposal.

The land capability classification is IIIw.

3A—Hoyleton silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is on broad rises in the uplands. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is dark brown, friable silt loam about 9 inches thick. The subsurface layer is brown and light yellowish brown, mottled, friable silt loam about 10 inches thick. The subsoil is about 26 inches thick. It is mottled. The upper part is brown, firm silty clay loam that has many silt coatings; the next part is yellowish brown, firm silty clay; and the lower part is light brownish gray, firm silty clay loam and silt loam. The underlying material to a depth of 60 inches is light brownish gray and yellowish brown, friable silt loam. In some areas the subsoil has less clay. In other areas the surface layer is lighter colored. In places gray mottles are higher in the subsoil.

Included with this soil in mapping are small areas of the poorly drained Cisne and Wynoose soils. These soils are in shallow depressions and drainageways below the Hoyleton soil. Wynoose soils have a surface layer that is lighter colored than that of the Hoyleton soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Hoyleton soil at a slow rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is well suited to cultivated crops and poorly suited to dwellings and septic tank absorption fields.

If this soil is used for soybeans, corn, or small grain, the seasonal high water table delays planting in most years. It can be lowered by surface ditches or subsurface drains. Erosion is a hazard in areas where slopes are very long. It can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting. Tilling when the soil is wet causes surface compaction, reduces the rate of water infiltration, and causes excessive runoff. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIw.

3B—Hoyleton silt loam, 2 to 5 percent slopes. This gently sloping, somewhat poorly drained soil is on rises and knolls in the uplands. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 9 inches thick. The subsurface layer is brown, friable silt loam about 8 inches thick. The subsoil is about 29 inches thick. It is mottled. The upper part is yellowish brown, firm silty clay loam that has many silt coatings; the next part is yellowish brown, firm silty clay; and the lower part is yellowish brown, firm silty clay loam and silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable silt loam. In some areas the subsoil has less clay. In other areas the surface layer is lighter colored. In some eroded areas it has been mixed with the upper part of the subsoil through cultivation.

Included with this soil in mapping are small areas of the poorly drained Cisne and Wynoose soils. These soils are in shallow depressions and drainageways below the Hoyleton soil. Wynoose soils have a surface layer that is lighter colored than that of the Hoyleton soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Hoyleton soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 1 to 3 feet from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, erosion is a hazard unless the surface is protected. Erosion can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting, by contour farming, or by terraces. The seasonal high water table can delay planting in some years. It can be lowered by surface ditches. Tilling when the soil is wet causes surface compaction and reduces the rate of water infiltration. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

8D2—Hickory loam, 10 to 18 percent slopes, eroded. This strongly sloping, well drained soil is on side slopes and foot slopes in the uplands. Individual areas range from 4 to 95 acres in size.

Typically, the surface soil is brown and yellowish brown, friable loam about 7 inches thick. The subsoil is yellowish brown, mottled, firm clay loam about 38 inches thick. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm, calcareous loam. In some uneroded areas the surface layer is darker and thinner. In some places it has less sand and more silt. In other places it is clay loam.

Included with this soil in mapping are small areas of the moderately well drained Ava and Zanesville soils. These soils are higher on the landscape than the Hickory soil. Also, Ava soils have less sand in the upper part. Zanesville soils are underlain by bedrock residuum. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Hickory soil at a moderate rate. Surface runoff is rapid. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are used as woodland or pasture. This soil is moderately suited to cultivated crops, hay, pasture, dwellings, and septic tank absorption fields. It is well suited to woodland.

If the soil is used for corn, soybeans, or small grain, further erosion is a hazard. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and productivity.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the slope and the shrink-swell potential are limitations. Cutting, filling, and land shaping help to overcome the slope. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The moderate permeability and the slope are limitations if this soil is used as a site for septic tank absorption fields. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderate permeability. Installing the filter lines on the contour or cutting and land shaping help to overcome the slope.

The land capability classification is IIIe.

8F—Hickory loam, 18 to 30 percent slopes. This steep, well drained soil is on side slopes in the uplands. Individual areas range from 2 to 60 acres in size.

Typically, the surface layer is very dark grayish brown, friable loam about 4 inches thick. The subsurface layer is yellowish brown, friable loam about 4 inches thick. The subsoil to a depth of more than 60 inches is yellowish brown, firm clay loam. It is mottled in the lower part. In some areas the surface layer is darker. In some areas near Centerville, the lower part of the subsoil is brown loamy sand. In places the surface layer has less sand and more silt.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap and moderately well drained Ava and Hosmer soils. Belknap soils are in drainageways below the Hickory soil. Ava and Hosmer soils are in the less sloping areas above the Hickory soil. Ava soils have less sand in the upper part than the Hickory soil. Hosmer soils formed in loess. Included soils make up 8 to 12 percent of the unit.

Water and air move through the Hickory soil at a moderate rate. Surface runoff is rapid. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are used as woodland or pasture. This soil is well suited to woodland and to woodland wildlife habitat. It is moderately suited to pasture and poorly suited to hay. It is generally unsuited to cultivated crops, dwellings, and septic tank absorption fields because of the slope.

Erosion control is needed when grasses and legumes are becoming established in the pastured areas. In areas where the pasture is established, seeding legumes on the contour improves the quality of the forage and helps to control erosion. A permanent cover of pasture plants helps to control erosion and maintains tilth. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as woodland, the hazard of erosion and an equipment limitation are management concerns because of the slope. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soil is firm enough to support the equipment. Plant competition is an additional management concern. It retards the growth of desirable seedlings. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means. Firebreaks should be the grass type. 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.

The land capability classification is VIe.

8G—Hickory loam, 30 to 50 percent slopes. This very steep, well drained soil is on dissected side slopes in the uplands. Individual areas range from 5 to 130 acres in size.

Typically, the surface layer is very dark grayish brown, friable loam about 2 inches thick. The subsurface layer is yellowish brown, friable loam about 3 inches thick. The subsoil is yellowish brown, firm clay loam about 41 inches thick. It is mottled in the lower part. The underlying material to a depth of 60 inches is yellowish brown, firm, calcareous loam. In some areas the surface layer has less sand and more silt.

Included with this soil in mapping are small areas of Berks soils and small areas of the somewhat poorly drained Belknap soils. Berks soils are shallow over bedrock. They are on slopes below the Hickory soil. Belknap soils are in drainageways below the Hickory soil. Included soils make up 2 to 10 percent of the unit.

Water and air move through the Hickory soil at a moderate rate. Surface runoff is very rapid. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are wooded. This soil is well suited to woodland wildlife habitat. It is moderately suited to

woodland and poorly suited to pasture. It is generally unsuited to cultivated crops, hay, dwellings, and septic tank absorption fields because of the slope.

If this soil is used as woodland, the hazard of erosion and an equipment limitation are management concerns because of the slope. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soil is firm enough to support the equipment. Plant competition is an additional management concern. It retards the growth of desirable seedlings. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means. Firebreaks should be the grass type. 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.

The dense stands of timber provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

The land capability classification is VIIe.

12—Wynoose silt loam. This nearly level, poorly drained soil is on broad flats in the uplands. Individual areas range from 5 to 60 acres in size.

Typically, the surface layer is dark grayish brown, mottled, friable silt loam about 8 inches thick. The subsurface layer is light brownish gray and grayish brown, mottled, friable silt loam about 15 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled and firm. The upper part is light brownish gray silty clay, and the lower part is grayish brown silty clay loam. In some areas the surface layer is darker. In other areas the subsoil has less clay and more silt.

Included with this soil in mapping are small areas of the somewhat poorly drained Bluford soils on broad ridges and knolls and the moderately well drained Ava soils on convex ridgetops and side slopes. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Wynoose soil at a very slow rate. Surface runoff is slow. A perched seasonal high water table is within a depth of 2 feet from March through June in most years. Available water capacity is high. Organic matter content is low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The seasonal wetness is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal wetness and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons and mounds are alternative methods of waste disposal.

The land capability classification is IIIw.

13A—Bluford silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is on broad flats and ridges in the uplands. Individual areas range from 5 to 90 acres in size.

Typically, the surface layer is dark grayish brown, mottled, friable silt loam about 8 inches thick. The subsurface layer is brown and pale brown, mottled, friable silt loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. In sequence downward, it is brown, firm silty clay loam; light brownish gray, firm silty clay; brown, firm silty clay loam; and brown, firm, brittle silty clay loam. In some areas, the subsurface layer is thicker and the subsoil has less clay. In places the surface layer is darker.

Included with this soil in mapping are small areas of the moderately well drained Ava soils on the higher rises and knolls. These soils have less clay in the subsoil than the Bluford soil. Also included are small areas of the poorly drained Wynoose soils in small depressions. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Bluford soil at a slow rate. Surface runoff is slow. A perched seasonal high water table is at a depth of 1 to 3 feet from March through June in most years. Available water capacity is

high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in most years. It can be lowered by surface ditches or subsurface drains. Erosion is a hazard in areas where slopes are very long. It can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting. Tilling when the soil is wet causes surface compaction and reduces the rate of water infiltration. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function well on this soil.

The land capability classification is IIw.

13B—Bluford silt loam, 2 to 5 percent slopes. This gently sloping, somewhat poorly drained soil is on broad ridges in the uplands. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 8 inches thick. The subsurface layer is light yellowish brown and light gray, friable silt loam about 9 inches thick. The subsoil to a depth of more than 60 inches is mottled silty clay loam. The upper part is pale brown and firm, and the lower part is light brownish gray, firm, and brittle. In some areas the subsoil has less clay and more silt. In some eroded areas the surface layer has been mixed with the upper part of the subsoil through cultivation. In some places, the subsurface layer is thicker and the subsoil has less clay. In other places the surface layer is darker.

Included with this soil in mapping are small areas of the moderately well drained Ava soils on the higher ridges and knolls. These soils have less clay in the subsoil than the Bluford soil. Also included are small areas of the poorly drained Wynoose soils in drainageways and depressions. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Bluford soil at a slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1 to 3 feet from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture. It is poorly suited to dwellings and septic tank absorption fields.

In areas used for corn, soybeans, or small grain, erosion is a hazard unless the surface is protected. Erosion can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting, by contour farming, or by terraces. Wetness can delay planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface compaction and reduces the rate of water infiltration. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal wetness is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal wetness and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

13B2—Bluford silt loam, 2 to 5 percent slopes, eroded. This gently sloping, somewhat poorly drained soil is on side slopes along drainageways on uplands. Small watercourses and seepy areas are common. Individual areas range from 3 to 80 acres in size.

Typically, the surface soil is brown and yellowish brown, friable silt loam about 11 inches thick. The subsoil is about 33 inches thick. It is mottled and firm. The upper part is yellowish brown silty clay loam that has many silt coatings, the next part is light brownish gray silty clay loam, and the lower part is light gray, brittle silt loam. The underlying material to a depth of 60 inches is light gray, mottled, firm silt loam. In severely eroded areas the surface layer has more clay. In some places the lower part of the subsoil has more sand. In

other places the subsoil has less clay.

Included with this soil in mapping are small areas of Ava and Wynoose soils. The moderately well drained Ava soils are in the more sloping areas along drainageways. They have less clay in the subsoil than the Bluford soil. The poorly drained Wynoose soils are in drainageways and at the head of drainageways below the Bluford soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Bluford soil at a slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1 to 3 feet from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains because it generally contains firm subsoil material. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. Some are used for hay or pasture. This soil is well suited to cultivated crops and to hay and pasture. It is poorly suited to dwellings and septic tank absorption fields.

In areas used for corn, soybeans, or small grain, erosion is a hazard unless the surface is protected. Erosion can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting, by contour farming, or by terraces. Wetness can delay planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface compaction and reduces the rate of water infiltration. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal wetness is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal wetness and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

14B—Ava silt loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on interfluves and knolls in the uplands. Individual areas range from 3 to 100 acres in size.

Typically, the surface layer is brown, friable silt loam about 8 inches thick. The subsurface layer is yellowish brown, friable silt loam about 3 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is yellowish brown, firm silty clay loam; the next part is yellowish brown, mottled, firm silty clay loam that has many silt coatings; and the lower part is yellowish brown and light yellowish brown, mottled, firm, brittle silty clay loam. In some areas the lower part of the subsoil is less brittle. In some eroded areas the surface layer has been mixed with the upper part of the subsoil through cultivation.

Included with this soil in mapping are small areas of the somewhat poorly drained Bluford soils. These soils have more clay in the subsoil than the Ava soil. They are in the more nearly level areas below the Ava soil. They make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Ava soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1.5 to 3.5 feet from March through June in most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. Some are used as pasture or woodland. This soil is well suited to cultivated crops and to hay and pasture. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

Measures that control erosion are needed in areas used for soybeans, corn, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the foundations lowers the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

14B2—Ava silt loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil is on narrow ridgetops and side slopes along drainageways on uplands. Individual areas range from 3 to 80 acres in size.

Typically, the surface layer is dark brown, friable silt loam about 6 inches thick. The subsoil is about 48 inches thick. In sequence downward, it is yellowish brown, mottled, friable silty clay loam; strong brown, friable silty clay loam that has many silt coatings; yellowish brown and strong brown, mottled, friable silty clay loam; and strong brown, mottled, friable silty clay loam. The underlying material to a depth of 60 inches is strong brown, mottled, friable silt loam. In places the subsoil is less brittle. In severely eroded areas the surface layer has more clay. In some areas along drainageways, slopes are more than 5 percent.

Included with this soil in mapping are small areas of the somewhat poorly drained Bluford soils at the head of drainageways and on some of the lower slopes. These soils have more clay in the subsoil than the Ava soil. They make up 3 to 10 percent of the unit.

Water and air move through the upper part of the Ava soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1.5 to 3.5 feet from March through June in most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

Measures that control erosion are needed in areas used for soybeans, corn, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

Establishing pasture and hay crops helps to keep soil loss within tolerable limits in the more sloping areas. Seedbed preparation is difficult in severely eroded areas where the subsoil is exposed. A no-till method of seeding or pasture renovation helps in establishing forage species and in controlling erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the foundations lowers the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

14C2—Ava silt loam, 5 to 10 percent slopes, eroded. This sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from 3 to 40 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 8 inches thick. The subsoil is about 43 inches thick. The upper part is yellowish brown, friable silt loam and silty clay loam; the next part is dark brown, mottled, friable silty clay loam that has many silt coatings; and the lower part is yellowish brown, mottled, firm, brittle silty clay loam and silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm silt loam. In some areas sandstone residuum is within a depth of 60 inches. In severely eroded areas the surface layer has more clay. In some places the subsoil is less brittle. In other places it has more sand and has some gravel.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap soils. These soils are along drainageways below the Ava soil. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Ava soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1.5 to 3.5 feet from March through June in most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains, especially in cultivated areas. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used as pasture or woodland. Some are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture and is well suited to woodland. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Seedbed preparation is difficult in cultivated areas where the subsoil is exposed. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the foundations lowers the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIIe.

14C3—Ava silty clay loam, 5 to 10 percent slopes, severely eroded. This sloping, moderately well drained soil is on side slopes in the uplands. In most areas, nearly all of the original surface layer had been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is dark yellowish brown, friable silty clay loam about 3 inches thick. The subsoil is about 28 inches thick. The upper part is dark yellowish brown, firm silty clay loam that has many silt coatings; the next part is brown, firm, brittle silty clay loam; and the lower part is yellowish brown, mottled, friable silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm silt loam and silty clay loam. In some areas the subsoil has more sand and has some gravel. In other areas the surface layer has less clay. In some places the subsoil is less brittle. In other places bedrock residuum is within a depth of 60 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap soils. These soils are along drainageways below the Ava soil. They make up 5 to 10 percent of the unit.

Water and air move through the Ava soil at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1.5 to 3.5 feet from March through June in most years. Available water capacity is moderate. Organic matter content is low. The surface layer tends to crust or puddle after hard rains because it contains primarily subsoil material. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is poorly suited to cultivated crops and moderately suited to hay and pasture. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the foundations lowers the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal wetness and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IVe.

15B—Parke silt loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on kames in the uplands. Individual areas range from 3 to 35 acres in size.

Typically, the surface layer is brown, friable silt loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark yellowish brown, friable silty clay loam; the next part is strong brown, friable silt loam; and the lower part is strong brown, firm clay loam. In places the lower part of the subsoil has less sand.

Included with this soil in mapping are small areas of the moderately well drained, very slowly permeable Ava soils on the lower ridges. These soils make up 5 to 10 percent of the unit.

Water and air move through the Parke soil at a moderate rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used for hay or pasture. Some are cultivated. This soil is well suited to cultivated crops, hay, pasture, woodland, septic tank absorption fields, and dwellings with basements. It is moderately suited to dwellings without basements.

Measures that control erosion are needed in areas used for soybeans, corn, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

A cover of grasses and legumes improves tilth and helps to control erosion. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

If this soil is used as a site for dwellings without basements, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIe.

15C2—Parke silt loam, 5 to 10 percent slopes, eroded. This sloping, well drained soil is on kames in the uplands. Individual areas range from 3 to 90 acres in size.

Typically, the surface layer is brown, friable silt loam about 5 inches thick. The subsoil extends to a depth of more than 60 inches. It is friable. The upper part is strong brown silty clay loam, the next part is strong brown silt loam, and the lower part is yellowish red loam. In severely eroded areas the surface layer has more clay. In some places the lower part of the subsoil has less sand. In other places the surface layer is darker and thinner.

Included with this soil in mapping are small areas of the moderately well drained, very slowly permeable Ava soils on the lower parts of the slopes. These soils make up 5 to 10 percent of the unit.

Water and air move through the Parke soil at a moderate rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains, especially in cultivated areas. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used as pasture or woodland. Some are cultivated. This soil is moderately suited to cultivated crops. It is well suited to hay, pasture, woodland, septic tank absorption fields, and dwellings with basements. It is moderately suited to dwellings without basements.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits.

Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings without basements, the shrink-swell potential is a limitation. Also, the slope is a limitation in the steeper areas. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Cutting, filling, and land shaping help to overcome the slope.

The slope is a limitation if the more sloping areas of this soil are used as sites for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IIIe.

15D2—Parke silt loam, 10 to 18 percent slopes, eroded. This strongly sloping, well drained soil is on the side slopes of kames in the uplands. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is dark yellowish brown, friable silt loam; yellowish brown, friable silty clay loam; strong brown, friable silt loam; and strong brown and yellowish red, friable loam. In some areas the lower part of the subsoil has less sand. In severely eroded areas the surface layer has more clay.

Included with this soil in mapping are small areas of the moderately well drained, very slowly permeable Ava soils on the lower slopes. These soils make up 3 to 10 percent of the unit.

Water and air move through the Parke soil at a moderate rate. Surface runoff is rapid. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains, especially in cultivated areas. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used as pasture or woodland. This soil is poorly suited to cultivated crops. It is well suited to woodland and to woodland wildlife habitat. It is moderately suited to hay, pasture, dwellings, and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of

trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the slope is a limitation. Cutting, filling, and land shaping help to overcome this limitation. On sites for dwellings without basements, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The slope is a limitation if this soil is used as a site for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IVe.

19C3—Sylvan silty clay loam, 5 to 10 percent slopes, severely eroded. This sloping, well drained soil is on side slopes in the uplands. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 3 to 35 acres in size.

Typically, the surface layer is yellowish brown, friable silty clay loam about 5 inches thick. The subsoil is about 10 inches thick. It is yellowish brown and friable. The upper part is silty clay loam, and the lower part is silt loam. The underlying material to a depth of 60 inches is yellowish brown and light yellowish brown, mottled, friable, calcareous silt loam. In some areas free carbonates are below a depth of 40 inches. In other areas the surface layer has less clay.

Included with this soil in mapping are small areas of somewhat poorly drained soils along drainageways near the base of the slopes. These soils are often seepy in the spring and have more clay in the subsoil than the Sylvan soil. They make up 3 to 7 percent of the unit.

Water and air move through the Sylvan soil at a moderate rate. Surface runoff is medium. Available water capacity is very high. Organic matter content is low. The surface layer tends to crust or puddle after hard rains because it contains subsoil material. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is poorly suited to cultivated crops and moderately suited to hay, pasture, and dwellings without basements. It is well suited to woodland, septic tank absorption fields, and dwellings with basements.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as a site for dwellings without basements, the shrink-swell potential is a limitation. Also, the slope is a limitation in the steeper areas. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Cutting, filling, and land shaping help to overcome the slope.

The slope is a limitation if the more sloping areas of this soil are used as sites for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IVe.

19D3—Sylvan silty clay loam, 10 to 18 percent slopes, severely eroded. This strongly sloping, well drained soil is on side slopes in the uplands. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 3 to 30 acres in size.

Typically, the surface layer is dark yellowish brown, friable silty clay loam about 5 inches thick. The subsoil is yellowish brown, friable silty clay loam about 7 inches thick. The underlying material to a depth of 60 inches is brownish yellow, mottled, friable, calcareous silt loam. In places free carbonates are below a depth of 40 inches. In some areas the surface layer has less clay.

Included with this soil in mapping are small areas of somewhat poorly drained soils along drainageways near the base of the slopes. These soils are often seepy in the spring and have more clay in the subsoil than the Sylvan soil. They make up 3 to 7 percent of the unit.

Water and air move through the Sylvan soil at a moderate rate. Surface runoff is rapid. Available water capacity is very high. Organic matter content is low. The surface layer tends to crust or puddle after hard

rains because it contains subsoil material. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is poorly suited to cultivated crops and moderately suited to hay and pasture. It is well suited to woodland and moderately suited to septic tank absorption fields and dwellings.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as a site for dwellings, the slope is a limitation. Cutting, filling, and land shaping help to overcome this limitation. The shrink-swell potential is a limitation on sites for dwellings without basements. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The slope is a limitation if this soil is used as a site for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IVe.

19F—Sylvan silt loam, 18 to 30 percent slopes. This steep, well drained soil is on side slopes in the uplands. Individual areas range from 3 to 120 acres in size.

Typically, the surface layer is dark brown, friable silt loam about 3 inches thick. The subsurface layer is brown, friable silt loam about 5 inches thick. The subsoil is about 24 inches thick. It is yellowish brown and friable. The upper part is silt loam and silty clay loam, and the lower part is calcareous silt loam. The underlying material to a depth of 60 inches is light brownish gray, mottled, friable, calcareous silt loam. In some areas, the subsoil is thicker and free carbonates are below a depth of 40 inches. In places the underlying material has more sand.

Included with this soil in mapping are small areas of Berks and Hickory soils on the lower side slopes. Berks soils formed in material weathered from bedrock. Hickory soils formed in glacial till. Also included are small areas of the somewhat poorly drained Wakeland soils along drainageways or small streams. Included soils make up 6 to 12 percent of the unit.

Water and air move through the Sylvan soil at a moderate rate. Surface runoff is very rapid. Available water capacity is very high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are wooded. Some are used as pasture. This soil is moderately suited to woodland and well suited to woodland wildlife habitat. It is poorly suited to hay and pasture. It is generally unsuited to dwellings and septic tank absorption fields because of the slope.

Erosion control is needed when grasses and legumes are becoming established in the pastured areas. In areas where the pasture is established, seeding legumes on the contour improves the quality of the forage and helps to control erosion. A permanent cover of pasture plants helps to control erosion and maintains tilth. Operating machinery is difficult on the steeper slopes. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as woodland, the hazard of erosion, an equipment limitation, and seedling mortality are management concerns. Plant competition also is a management concern. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Firebreaks should be the grass type. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soil is firm enough to support the equipment. The seedling mortality rate can be reduced by planting species that can withstand droughty conditions, by eliminating all competing vegetation near the seedlings, and by selecting the larger seedlings for planting. 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.

The dense stands of timber provide good habitat for woodland wildlife. This soil is suitable for wild herbaceous plants and hardwood trees. Measures that protect the habitat from fire and grazing help to prevent

depletion of the shrubs and sprouts that provide food for the wildlife.

The land capability classification is VIe.

53B—Bloomfield fine sand, 1 to 5 percent slopes. This gently sloping, somewhat excessively drained soil is on dunes on terraces. Individual areas range from 5 to 40 acres in size.

Typically, the surface layer is dark yellowish brown, very friable fine sand about 10 inches thick. The subsurface layer is yellowish brown, very friable fine sand about 12 inches thick. The subsoil to a depth of 60 inches occurs as alternating bands of strong brown, very friable loamy sand and yellowish brown, loose sand. In some areas between Carmi and Phillipstown, the lower part of the subsoil has a band of silt loam about 20 inches thick. In places the upper part of the subsoil has more clay.

Included with this soil in mapping are small areas of the well drained Alvin and poorly drained Ruark soils on the lower parts of the landscape. These soils have more clay in the subsoil than the Bloomfield soil. Also included are areas that are low enough on the landscape to be subject to rare flooding. Included soils make up 10 to 15 percent of the unit.

Water and air move through the Bloomfield soil at a rapid rate. Surface runoff is slow. Available water capacity and organic matter content are low. The shrink-swell potential and the potential for frost action also are low.

Most areas are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture and is well suited to dwellings. It is poorly suited to woodland and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, soil blowing is a hazard and the low available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting and winter cover crops help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

If this soil is used as a site for septic tank absorption fields, a poor filtering capacity in the lower part of the subsoil can result in the pollution of ground water. A septic tank system functions satisfactorily only if a sealed sand filter and a disinfection tank are installed.

The land capability classification is IIIs.

53C—Bloomfield fine sand, 5 to 10 percent slopes. This sloping, somewhat excessively drained soil is on the side slopes of terraces. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is brown, very friable fine sand about 9 inches thick. The subsurface layer is dark yellowish brown, very friable loamy sand about 18 inches thick. The subsoil to a depth of 60 inches occurs as alternating bands of brown and strong brown, friable loamy sand and yellowish brown, loose sand. In some areas between Carmi and Phillipstown, the lower part of the subsoil has a band of silt loam about 20 inches thick. In places the upper part of the subsoil has more clay.

Included with this soil in mapping are small areas of the well drained Alvin and poorly drained Ruark soils on the lower parts of the landscape. These soils have more clay in the subsoil than the Bloomfield soil. They make up 5 to 10 percent of the unit.

Water and air move through the Bloomfield soil at a rapid rate. Surface runoff is slow. Available water capacity and organic matter content are low. The shrink-swell potential and the potential for frost action also are low.

Most areas are cultivated. This soil is moderately suited to cultivated crops, to hay and pasture, and to woodland. It is well suited to dwellings and poorly suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, water erosion and soil blowing are hazards. Also, the low available water capacity and the level of fertility are limitations. Water erosion can be controlled and moisture conserved by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, by terraces, or by a combination of these. Winter cover crops and a tillage system that leaves the surface rough are effective in controlling soil blowing. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, seedling mortality is a management concern. It can be controlled by planting species that can withstand the low available water capacity, which results from the high content of sand in the subsoil. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees. Measures that protect the woodland from fire are needed.

If this soil is used as a site for septic tank absorption fields, a poor filtering capacity in the lower part of the subsoil can result in the pollution of ground water. A septic tank system functions satisfactorily only if a sealed sand filter and a disinfection tank are installed.

The land capability classification is IIIe.

53D—Bloomfield fine sand, 10 to 18 percent slopes. This strongly sloping, somewhat excessively drained soil is on the side slopes of terraces. Individual areas range from 3 to 245 acres in size.

Typically, the surface layer is brown, very friable fine sand about 10 inches thick. The subsurface layer is yellowish brown, very friable fine sand about 19 inches thick. The subsoil to a depth of 60 inches occurs as alternating bands of dark brown, friable sandy loam and yellowish brown, very friable loamy sand. In places the subsoil has less clay.

Included with this soil in mapping are small areas of the well drained Alvin soils on the lower parts of the landscape. These soils have more clay in the subsoil than the Bloomfield soil. They make up 2 to 10 percent of the unit.

Water and air move through the Bloomfield soil at a rapid rate. Surface runoff is medium. Available water capacity and organic matter content are low. The shrink-swell potential and the potential for frost action also are low.

Most areas are wooded. Some are cultivated or are used for pasture or hay. This soil is poorly suited to cultivated crops and is moderately suited to pasture, hay, woodland, and dwellings. It is poorly suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, water erosion and soil blowing are hazards. Also, the low available water capacity and the level of fertility are limitations. Water erosion can be controlled and moisture conserved by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, by terraces, or by a combination of these. Field windbreaks and a tillage system that leaves the surface rough are effective in controlling soil blowing. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, seedling mortality is a management concern. It can be controlled by planting species that can withstand the low available water capacity, which results from the high content of sand in the subsoil. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees. Measures that protect the woodland from fire are needed.

If this soil is used as a site for dwellings, the slope is a limitation. Cutting, filling, and land shaping help to overcome this limitation.

If this soil is used as a site for septic tank absorption fields, a poor filtering capacity can result in the pollution of ground water. A septic tank system functions satisfactorily only if a sealed sand filter and a disinfection tank are installed.

The land capability classification is IVe.

75B—Drury silt loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on foot slopes on uplands and on stream terraces. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is brown, friable silt loam about 10 inches thick. The subsoil is dark yellowish brown and yellowish brown, friable silt loam about 32 inches thick. The underlying material to a depth of 60 inches is dark yellowish brown, mottled, friable silt loam. In places the surface layer is darker. In some areas slopes are more than 5 percent. In other areas rock fragments are below a depth of 40 inches.

Included in this soil in mapping are small areas of the moderately well drained Sciotoville and well drained Alford and Sylvan soils. Sciotoville soils are in the lower landscape positions and are subject to flooding. Alford and Sylvan soils formed in loess on side slopes above the Drury soil. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Drury soil at a moderate rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are wooded. Some are cultivated. This soil is well suited to cultivated crops, hay, pasture, woodland, dwellings, and septic tank absorption fields.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The land capability classification is IIe.

87A—Dickinson fine sandy loam, 0 to 2 percent slopes. This nearly level, somewhat excessively drained soil is on slight rises and broad flats on stream terraces. Individual areas range from 3 to 100 acres in size.

Typically, the surface layer is very dark grayish brown, friable fine sandy loam about 11 inches thick. The subsoil is about 23 inches thick. It is friable. The upper part is brown and dark yellowish brown sandy loam, and the lower part is dark yellowish brown loamy sand. The underlying material to a depth of 60 inches is yellowish brown, loose sand and dark yellowish brown, friable loamy sand. In some areas the subsoil is thicker and has more clay. In other areas, the surface layer is thicker and the subsoil has more silt and less sand. In one large area 2 miles east of the Carmi Airport, the lower part of the subsoil has a band of silt loam about 20 inches thick.

Included with this soil in mapping are small areas of the somewhat poorly drained Newhaven and poorly drained Ruark and Springerton soils. These soils are lower on the landscape than the Dickinson soil. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Dickinson soil at a moderately rapid rate and through the lower part at a rapid rate. Surface runoff is slow. Available water capacity is low. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture. It is well suited to dwellings. It is poorly suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, soil blowing is a hazard and the low available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting and winter cover crops help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

If this soil is used as a site for septic tank absorption fields, a poor filtering capacity can result in the pollution of ground water. A septic tank system functions satisfactorily only if a sealed sand filter and a disinfection tank are installed.

The land capability classification is IIIs.

87B—Dickinson fine sandy loam, 2 to 5 percent slopes. This gently sloping, somewhat excessively drained soil is on rises and knolls on stream terraces. Individual areas range from 3 to 30 acres in size.

Typically, the surface soil is dark brown and very dark grayish brown, friable fine sandy loam about 16 inches thick. The subsoil is about 26 inches thick. The upper part is dark yellowish brown and brown, friable fine sandy loam, and the lower part is strong brown, very friable loamy sand. The underlying material to a depth of 60 inches is strong brown, loose sand. In some areas the subsoil has more clay. In other areas, the surface layer is thicker and the subsoil has more silt and less sand. In the areas about 2 miles east of the Carmi Airport, the lower part of the subsoil has a band of silt loam about 20 inches thick.

Included with this soil in mapping are small areas of the somewhat poorly drained Newhaven soils. These soils are in the more nearly level areas below the Dickinson soil. They make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Dickinson soil at a moderately rapid rate and through the lower part at a rapid rate. Surface runoff is medium. Available water capacity is low. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture and well suited to dwellings. It is poorly suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, water erosion and soil blowing are hazards. Also, the low available water capacity and the level of fertility are limitations. Water erosion and soil blowing can be controlled and moisture conserved by a conservation tillage system that leaves crop residue on the surface after planting and by contour farming. Soil blowing also can be controlled by planting winter cover crops. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

If this soil is used as a site for septic tank absorption fields, a poor filtering capacity can result in the pollution of ground water. A septic tank system functions satisfactorily only if a sealed sand filter and a disinfection tank are installed.

The land capability classification is IIIe.

109—Racoon silt loam. This nearly level, poorly drained soil is on stream terraces, lake plains, and uplands. It is ponded for brief periods from March through June. Individual areas range from 5 to 200 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The subsurface layer is gray and light gray, mottled, friable silt loam about 17 inches thick. The subsoil to a depth of more than 60 inches is light gray, mottled, friable silty clay loam. In some areas the subsoil has more clay. In other areas it has less clay and more silt. In places 20 to 35 inches of silty alluvial material overlies lacustrine sediments of silty clay loam.

Included with this soil in mapping are small areas of the somewhat poorly drained Bluford and Creal soils on the higher parts of the landscape. Bluford soils have more clay in the solum than the Racoon soil. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Racoon soil at a moderately slow rate and through the lower part at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 1.0 foot below the surface from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops and to woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the ponding.

Corn and soybeans can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface ditches or subsurface drains reduce the wetness. Tilling when the soil is wet causes surface cloddiness and compaction. Minimizing tillage and returning crop residue to the soil improve tilth and increase the rate of water infiltration.

The land capability classification is IIIw.

131A—Alvin fine sandy loam, 0 to 2 percent slopes. This nearly level, well drained soil is on slight rises and broad flats on terraces. Individual areas range from 3 to 180 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark yellowish brown, friable fine sandy loam; the next part is brown and strong brown, friable sandy loam; and the lower part occurs as alternating bands of strong brown, loose sand and strong brown, very friable loamy sand. In some areas the subsoil has less sand. In places the surface layer is darker.

Included with this soil in mapping are small areas of the somewhat poorly drained Roby and poorly drained Ruark soils. These soils are in depressions and drainageways below the Alvin soil. They make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Alvin soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is slow. Available water capacity is moderate. Organic matter content is low. The shrink-swell potential also is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is well suited to cultivated crops, hay, pasture, dwellings, and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, soil blowing is a hazard and the moderate available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting and winter cover crops help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

The land capability classification is IIs.

131B—Alvin fine sandy loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on ridges on terraces and uplands. Individual areas range from 3 to 20 acres in size.

Typically, the surface layer is dark brown, friable fine sandy loam about 8 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is brown and strong brown, friable sandy loam; the next part is strong brown, very friable loamy sand; and the lower part occurs as alternating bands of strong brown, loose sand and dark brown, very friable loamy sand. In some areas the subsoil is thinner and has less clay. In other areas it has less sand. In some places the surface layer is darker. In other places slopes are as much as 8 percent.

Included with this soil in mapping are small areas of the somewhat poorly drained Roby soils. These soils are in depressions and the more nearly level areas below the Alvin soil. They make up 2 to 10 percent of the unit.

Water and air move the upper part of the Alvin soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is moderate. Organic matter content is low. The shrink-swell potential also is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is well suited to cultivated crops, hay, pasture, dwellings, and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, water erosion and soil blowing are hazards. Also, the moderate available water capacity and the level of fertility are limitations. Water erosion and soil blowing can be controlled and moisture conserved by a conservation tillage system that leaves crop residue on the surface after planting and by contour farming. Soil blowing also can be controlled by planting winter cover crops. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

The land capability classification is IIe.

131C—Alvin fine sandy loam, 5 to 10 percent slopes. This sloping, well drained soil is on side slopes on terraces and uplands. Individual areas range from 3 to 65 acres in size.

Typically, the surface layer is dark brown, very friable fine sandy loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is strong brown, friable fine sandy loam, and the lower part occurs as alternating bands of yellowish brown, loose sand and brown, very friable loamy sand. In some areas the subsoil has less clay. In other areas it has more clay. In places slopes are as much as 13 percent.

Included with this soil in mapping are small areas of the somewhat excessively drained Bloomfield and poorly drained Ruark soils. Bloomfield soils are in landscape positions similar to those of the Alvin soil. Ruark soils are in slightly depressional areas below the Alvin soil. Included soils make up 2 to 15 percent of the unit.

Water and air move through the upper part of the Alvin soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is moderate. Organic matter content is low. The shrink-swell potential also is low, and the potential for frost action is moderate.

Most areas are cultivated. Some are used as pasture or woodland. This soil is moderately suited to cultivated crops, to hay and pasture, and to woodland. It is well suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, water erosion and soil blowing are hazards. Also, the moderate available water capacity and the level of fertility are limitations. Water erosion and soil blowing can be controlled and moisture conserved by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, by terraces, or by a combination of these. Soil blowing also can be controlled by planting winter cover crops. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

If this soil is used as a site for dwellings, the slope is a limitation in the steeper areas. Cutting, filling, and land shaping help to overcome this limitation.

The slope is a limitation if the more sloping areas of this soil are used as sites for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IIIe.

131F—Alvin fine sandy loam, 18 to 30 percent slopes. This steep, well drained soil is on side slopes on terraces and uplands. Individual areas range from 3 to 30 acres in size.

Typically, the surface layer is very dark grayish brown, very friable fine sandy loam about 3 inches thick. The subsurface layer is yellowish brown, very friable fine sandy loam about 4 inches thick. The subsoil extends to a depth of more than 60 inches. The

upper part is yellowish brown, friable fine sandy loam; the next part is strong brown, firm and friable sandy loam; and the lower part occurs as alternating bands of yellowish brown, friable sandy loam and loose loamy sand. In some areas the subsoil has less clay. In other areas the surface layer and subsoil have more silt and less sand.

Included with this soil in mapping are small areas of Berks soils. These soils formed in bedrock residuum. They are on the lower parts of the slopes. They make up 2 to 7 percent of the unit.

Water and air move through the upper part of the Alvin soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is moderate. Organic matter content is low. The shrink-swell potential also is low, and the potential for frost action is moderate.

Most areas are wooded. Some are used as pasture. This soil is poorly suited to cultivated crops. It is moderately suited to hay and pasture and well suited to woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the slope.

Erosion control is needed when grasses and legumes are becoming established in the pastured areas. In areas where the pasture is established, seeding legumes on the contour improves the quality of the forage and helps to control erosion. A permanent cover of pasture plants helps to control erosion and maintains tilth. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as woodland, the hazard of erosion and an equipment limitation are management concerns because of the slope. Plant competition also is a management concern. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soil is firm enough to support the equipment. Plant 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. Firebreaks should be the grass type.

The land capability classification is VIe.

142—Patton silty clay loam. This nearly level, poorly drained soil is on broad, low flats and in drainageways on lake plains. It is subject to ponding for brief periods from March through June. Individual areas range from 3 to 400 acres in size.

Typically, the surface layer is very dark grayish brown, friable silty clay loam about 10 inches thick. The subsurface layer is very dark grayish brown, mottled, firm silty clay loam about 6 inches thick. The subsoil is mottled, friable silty clay loam about 32 inches thick. The upper part is dark grayish brown, the next part is grayish brown, and the lower part is gray. The underlying material to a depth of 60 inches is grayish brown, mottled, friable silty clay loam. In some areas the surface layer is lighter colored. In other areas the subsoil has more clay. Some areas have recently received overwash of light colored silt loam. In places the soil has more sand throughout.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and moderately well drained Uniontown soils. These soils are higher on the landscape than the Patton soil. Also, they have a lighter colored surface layer. Also included are areas that are subject to rare flooding. These areas are at the head of some drainageways near the Little Wabash River. Included soils make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Patton soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is very high. Organic matter content is high. The surface layer may become compact and cloddy if it is plowed when too wet. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal wetness delays planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

142+—Patton silt loam, overwash. This nearly level, poorly drained soil is on broad, low flats on lake plains. It is subject to ponding for brief periods from March through June. Individual areas range from 3 to 165 acres in size.

Typically, the surface layer is brown, friable silt loam about 10 inches thick. The underlying material is dark

grayish brown, dark gray, and brown, friable silt loam about 8 inches thick. Below this to a depth of 60 inches is a buried soil of mottled, firm silty clay loam. The upper part of the buried soil is very dark gray and very dark grayish brown, and the lower part is dark gray and gray. In some areas the soil has no light colored overwash or has a thinner layer of overwash. In other areas the buried soil has more sand throughout. In places the overwash is thicker.

Included with this soil in mapping are small areas of the moderately well drained Uniontown and somewhat poorly drained Henshaw soils. These soils are higher on the landscape than the Patton soil. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Patton soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is very high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal wetness delays planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

164A—Stoy silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is on broad rises in the uplands. Individual areas range from 3 to 200 acres in size.

Typically, the surface layer is brown, friable silt loam about 8 inches thick. The subsurface layer also is brown, friable silt loam. It is about 4 inches thick. The subsoil is about 27 inches thick. It is mottled. The upper part is pale brown, friable silty clay loam that has many silt coatings, and the lower part is yellowish brown, friable and firm silty clay loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable silt loam. In some areas the subsoil has more clay.

Included with this soil in mapping are small areas of the poorly drained Weir soils. These soils are in slight depressions below the Stoy soil. They make up 2 to 10 percent of the unit.

Water and air move through the Stoy soil at a slow rate. Surface runoff is slow. A perched seasonal high water table is at a depth of 1 to 3 feet from February through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in most years. It can be lowered by surface ditches or subsurface drains. Erosion is a hazard in areas where slopes are very long. It can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting. Tilling when the soil is wet causes surface compaction, reduces the rate of water infiltration, and causes excessive runoff. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function well on this soil.

The land capability classification is IIw.

164B—Stoy silt loam, 2 to 5 percent slopes. This gently sloping, somewhat poorly drained soil is on rises and knolls in the uplands. Individual areas range from 3 to 175 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsurface layer is light yellowish brown and pale brown, mottled, friable silt loam about 11 inches thick. The subsoil is about 28 inches thick. It is yellowish brown and mottled. The upper part is friable silty clay loam that has many silt coatings, and the lower part is firm, brittle silty clay loam and silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm silt loam. In places the subsoil has more clay. In some eroded areas the surface layer has been mixed with the upper part of the subsurface layer through cultivation.

Included with this soil in mapping are small areas of the moderately well drained Hosmer and poorly drained Weir soils. Hosmer soils are on the higher ridges and knolls. Weir soils are in slight depressions below the Stoy soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Stoy soil at a slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1 to 3 feet from February through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, erosion is a hazard unless the surface is protected. Also, the seasonal high water table can delay planting in some years. Erosion can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting, by contour farming, or by terraces. The seasonal high water table can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface compaction and reduces the rate of water infiltration. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

165—Weir silt loam. This nearly level, poorly drained soil is on broad, low flats in the uplands. It is subject to ponding for brief periods from February through June. Individual areas range from 3 to 15 acres in size.

Typically, the surface layer is grayish brown, mottled, friable silt loam about 10 inches thick. The subsurface layer is light gray, mottled, friable silt loam about 10 inches thick. The subsoil to a depth of 60 inches is grayish brown and light brownish gray, mottled, firm silty clay loam. In some areas the subsoil has less clay. In other areas the subsurface layer is thicker.

Included with this soil in mapping are small areas of the somewhat poorly drained Stoy soils. These soils are higher on the landscape than the Weir soil. They make up 5 to 10 percent of the unit.

Water and air move through the Weir soil at a very slow rate. Surface runoff is slow to ponded. A perched seasonal high water table is 0.5 foot above to 2.0 feet below the surface from February through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is generally unsuited to dwellings and septic tank absorption fields because of the ponding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The land capability classification is IIIw.

173A—McGary silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is on slight rises on lake plains. Individual areas range from 8 to 75 acres in size.

Typically, the surface layer is grayish brown, friable silt loam about 8 inches thick. The subsoil is mottled, firm silty clay about 31 inches thick. The upper part is brown, and the lower part is grayish brown and light brownish gray. The underlying material to a depth of 60 inches is light olive brown and yellowish brown, mottled, firm, calcareous silty clay loam. In some areas the soil has more sand throughout. In other areas the subsoil has less clay. In places the lower part of the subsoil is browner.

Included with this soil in mapping are small areas of the very poorly drained Montgomery and Zipp and poorly drained Sexton soils. These soils are in slight depressions and in drainageways below the McGary soil. Montgomery and Zipp soils have more clay in the surface layer than the McGary soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the McGary soil at a slow rate. Surface runoff is slow. A seasonal high water

table is at a depth of 1 to 3 feet from January through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for soybeans, corn, or small grain, the seasonal high water table delays planting in most years. It can be lowered by surface ditches or subsurface drains. Erosion is a hazard in areas where slopes are very long. It can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting. Tilling when the soil is wet causes surface compaction, reduces the rate of water infiltration, and causes excessive runoff. Returning crop residue to the soil and regularly adding other organic material increase the rate of water infiltration and improve tilth.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function well on this soil.

The land capability classification is IIIw.

173B2—McGary silt loam, 2 to 5 percent slopes, eroded. This gently sloping, somewhat poorly drained soil is on side slopes on lake plains. Individual areas range from 3 to 20 acres in size.

Typically, the surface layer is dark yellowish brown, firm silt loam about 6 inches thick. The subsoil is about 27 inches thick. It is mottled. The upper part is brown, firm silty clay; the next part is grayish brown, very firm silty clay; and the lower part is grayish brown, firm silty clay loam. The underlying material to a depth of 60 inches is grayish brown, firm, calcareous silty clay loam. In some areas the subsoil has less clay. In other areas the surface layer is darker and has more clay. In places the lower part of the subsoil is browner.

Included with this soil in mapping are small areas of Markland and Zipp soils. The well drained Markland soils are in landscape positions similar to those of the McGary soil. The very poorly drained Zipp soils are in slight depressions and in drainageways below the McGary soil. They have more clay in the surface layer than the McGary soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the McGary soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 1 to 3 feet from January through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. The seasonal high water table delays planting in most years. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Further erosion is a hazard. It can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting and by contour farming. 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.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the slow permeability are limitations. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function well on this soil.

The land capability classification is IIIe.

176—Marissa silt loam. This nearly level, somewhat poorly drained soil is on broad, low flats and in drainageways on lake plains. Individual areas range from 3 to 165 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 10 inches thick. The

subsurface layer is dark grayish brown, friable silt loam about 3 inches thick. The subsoil is about 44 inches thick. It is mottled. The upper part is dark grayish brown and light olive brown, firm silty clay loam, and the lower part is light olive brown, friable, calcareous silt loam. The underlying material to a depth of 60 inches is light olive brown, mottled, friable, calcareous silt loam. In places the soil has more sand throughout. In some areas the surface layer has more clay. In other areas it is lighter colored.

Included with this soil in mapping are small areas of Henshaw soils. These soils have a surface layer that is lighter colored than that of the Marissa soil. They are on slight rises above the Marissa soil. They make up 5 to 10 percent of the unit.

Water and air move through the Marissa soil at a moderate or moderately slow rate. Surface runoff is slow. A seasonal high water table is 1 to 3 feet below the surface from February through June in most years. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as a site for dwellings, the seasonal high water table is a limitation. Installing subsurface tile drains near the foundations helps to overcome the wetness.

The restricted permeability and the seasonal wetness are limitations if this soil is used as a site for septic tank absorption fields. Enlarging the absorption area helps to overcome the restricted permeability. Tile drains can lower the water table. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIw.

178—Ruark loam. This nearly level, poorly drained soil is on broad, low flats and in drainageways on terraces and lake plains. It is subject to ponding for brief periods from March through July. Individual areas range from 3 to 850 acres in size.

Typically, the surface layer is brown, friable loam about 8 inches thick. The subsurface layer is light brownish gray, mottled, friable loam about 11 inches thick. The subsoil is about 40 inches thick. It is mottled and firm. The upper part is light brownish gray and light gray clay loam, and the lower part is light gray loam. The underlying material to a depth of 60 inches is light gray, mottled, friable sandy loam. In some areas the subsoil has more clay. In other areas it has less clay and more sand. In places the surface layer is darker.

Included with this soil in mapping are small areas of the well drained Skelton and somewhat poorly drained Crawleyville soils. These soils are higher on the landscape than the Ruark soil. They make up 5 to 10 percent of the unit.

Water and air move through the Ruark soil at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through July in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the ponding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The land capability classification is IIIw.

184—Roby fine sandy loam. This nearly level, somewhat poorly drained soil is on broad rises on terraces and lake plains. Individual areas range from 3 to 50 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 9 inches thick. The subsurface layer is dark yellowish brown, mottled, friable fine sandy loam about 4 inches thick. The subsoil is mottled, friable sandy loam about 22 inches thick. The upper part is yellowish brown, and the lower part is brown. The underlying material to a depth of 60 inches is mottled. The upper part is brown, very friable loamy sand, and the lower part is strong brown, loose sand. In some areas the subsoil has less sand. In other areas the surface layer is darker.

Included with this soil in mapping are small areas of the well drained Alvin and poorly drained Ruark soils. Alvin soils are on the crest of ridges above the Roby soil. Ruark soils are in depressions and drainageways

below the Roby soil. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Roby soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from March through June in most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, soil blowing is a hazard and the low available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting, winter cover crops, and field windbreaks help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

If this soil is used as a site for dwellings, the seasonal high water table is a limitation. Installing subsurface tile drains near the foundation helps to overcome this limitation.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains help to lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is IIs.

208—Sexton silt loam. This nearly level, poorly drained soil is on broad, low flats on stream terraces and lake plains. Individual areas range from 3 to 45 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 10 inches thick. The subsoil to a depth of more than 60 inches is mottled, firm silty clay loam. The upper part is light brownish gray, and the lower part is gray and light gray. In some areas the surface layer has more clay. In other areas the soil has more sand throughout. In places the surface layer is darker.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and McGary soils. These soils are slightly higher on the landscape than the Sexton soil. Also, Henshaw soils have less clay in the subsoil. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Sexton soil at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is within a depth of 2 feet from March through June in most years. Available water capacity is high. Organic matter content is moderate. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The slow permeability and the seasonal wetness are limitations if this soil is used as a site for septic tank absorption fields. Enlarging the absorption area helps to overcome the slow permeability. Tile drains can lower the water table. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIw.

214B—Hosmer silt loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on interfluves and knolls in the uplands. Individual areas range from 3 to 170 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsurface layer is yellowish brown, mottled, friable silt loam about 4 inches thick. The subsoil is firm silty clay loam about 42 inches thick. The upper part is strong brown, the next part is strong brown and has common or many silt coatings, and the lower part is strong brown, mottled, and brittle. The underlying material to a depth of 60 inches is strong brown and light yellowish brown, mottled, firm silt loam. In some places the underlying material has more sand. In other places the subsoil does not have a brittle layer. In some eroded areas the surface layer is lighter colored because it has been mixed with the upper part

of the subsoil through cultivation.

Included with this soil in mapping are small areas of the somewhat poorly drained Stoy soils. These soils are in the more nearly level areas below the Hosmer soil. They make up 2 to 7 percent of the unit.

Water and air move through the upper part of the Hosmer soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at the depth of 2.5 to 3.0 feet in March and April of most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is moderately suited to dwellings. It is poorly suited to septic tank absorption fields.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

A cover of grasses and legumes improves tilth and helps to control erosion. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

The seasonal high water table is a limitation if this soil is used as a site for dwellings with basements. Installing subsurface drains around the foundations helps to lower the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

214B2—Hosmer silt loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil is on narrow interfluves and side slopes along drainageways on uplands. Individual areas range from 2 to 185 acres in size.

Typically, the surface layer is dark yellowish brown, friable silt loam about 8 inches thick. The subsoil is about 34 inches thick. In sequence downward, it is yellowish brown, friable silt loam and silty clay loam; yellowish brown, mottled, friable silt loam that has many silt coatings; brown, mottled, firm, brittle silty clay loam; and yellowish brown, mottled, firm, brittle silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm silt loam. In some areas gray mottles are higher in the subsoil. In other areas the underlying material has more sand. In places the subsoil does not have a brittle layer. In uneroded areas the surface layer is darker.

Included with this soil in mapping are small areas of the somewhat poorly drained Stoy soils. These soils are in the more nearly level areas below the Hosmer soil. They make up 2 to 7 percent of the unit.

Water and air move through the upper part of the Hosmer soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 2.5 to 3.0 feet in March and April of most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is moderately suited to dwellings. It is poorly suited to septic tank absorption fields.

Measures that control erosion are needed in areas used for soybeans, corn, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

Establishing pasture and hay crops helps to keep soil loss within tolerable limits. Seedbed preparation is difficult in areas on side slopes where the subsoil is exposed. A no-till method of seeding or pasture renovation helps in establishing forage species and in controlling erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

The seasonal high water table is a limitation if this soil is used as a site for dwellings with basements. Installing subsurface drains around the foundations helps to lower the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps

to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

214C2—Hosmer silt loam, 5 to 10 percent slopes, eroded. This sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from 3 to 75 acres in size.

Typically, the surface layer is dark yellowish brown, friable silt loam about 7 inches thick. The subsoil is silty clay loam about 49 inches thick. The upper part is yellowish brown and friable; the next part is yellowish brown, mottled, and friable and has many silt coatings; and the lower part is strong brown, mottled, firm, and brittle. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm silt loam. In some places the underlying material has more sand. In other places the subsoil does not have a brittle layer. In uneroded areas the surface layer is darker. In severely eroded areas it has more clay. In places bedrock residuum is within a depth of 60 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap and Creal soils. These soils are lower on the landscape than the Hosmer soil. Belknap soils are frequently flooded. Included soils make up 5 to 15 percent of the unit.

Water and air move through the upper part of the Hosmer soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 2.5 to 3.0 feet in March and April of most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains, especially in cultivated areas. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used as pasture or woodland. Some are cultivated. This soil is moderately suited to cultivated crops, to hay and pasture, and to dwellings. It is well suited to woodland. It is poorly suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

The seasonal high water table is a limitation if this soil is used as a site for dwellings with basements. Installing subsurface drains around the foundations helps to lower the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIIe.

214C3—Hosmer silty clay loam, 5 to 10 percent slopes, severely eroded. This sloping, moderately well drained soil is on side slopes in the uplands. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 3 to 70 acres in size.

Typically, the surface layer is dark yellowish brown, friable silty clay loam about 7 inches thick. The subsoil is yellowish brown, mottled, firm, brittle silty clay loam about 26 inches thick. The underlying material to a

depth of 60 inches is strong brown, mottled, firm silt loam. In some areas the underlying material has more sand. In other areas the subsoil is less brittle. In some places the surface layer has less clay. In other places bedrock residuum is within a depth of 60 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap and Creal soils. These soils are lower on the landscape than the Hosmer soil. Belknap soils are frequently flooded. Included soils make up 5 to 15 percent of the unit.

Water and air move through the upper part of the Hosmer soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 2.5 to 3.0 feet in March and April of most years. Available water capacity is moderate. Organic matter content is low. The surface layer tends to crust or puddle after hard rains because it contains subsoil material. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is poorly suited to cultivated crops. It is moderately suited to hay, pasture, and dwellings. It is well suited to woodland. It is poorly suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

The seasonal high water table is a limitation if this soil is used as a site for dwellings with basements. Installing subsurface drains around the foundations helps to lower the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IVe.

231—Evansville silt loam. This nearly level, poorly drained soil is on broad, low flats on lake plains. It is subject to ponding for brief periods from March through June. Individual areas range from 3 to 20 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The subsoil is grayish brown, mottled, firm silty clay loam about 37 inches thick. The underlying material to a depth of 60 inches is light grayish brown and yellowish brown, mottled, firm silty clay loam. In some areas the surface layer is darker. In other areas the subsoil has more clay. In places the soil has more sand throughout.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and moderately well drained Uniontown soils. These soils are higher on the landscape than the Evansville soil. They make up 5 to 10 percent of the unit.

Water and air move through the Evansville soil at a moderate rate. Surface runoff is slow to ponded. The seasonal high water table is 0.5 foot above to 1.0 feet below the surface from January through May in most years. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to openland wildlife habitat. It is generally unsuited to septic tank absorption fields and dwellings because of the ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

301B—Grantsburg silt loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on interfluves in the uplands. Individual areas range from 4 to 135 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsoil is about 48 inches thick. In sequence downward, it is dark yellowish brown and yellowish brown, friable silt loam and silty clay loam; yellowish brown, friable silty clay loam that has many silt coatings; yellowish brown, mottled, firm silty

clay loam; and strong brown, mottled, firm, brittle silt loam. The underlying material to a depth of 60 inches is yellowish brown, friable silt loam. In some areas the subsoil does not have a brittle layer. In other areas the surface layer is lighter colored because it has been mixed with the upper part of the subsoil through cultivation. In some places the lower part of the subsoil and the underlying material have more sand. In other places bedrock is within a depth of 60 inches.

Included with this soil in mapping are small areas of somewhat poorly drained soils. These soils are at the head of drainageways below the Grantsburg soil. They make up 3 to 7 percent of the unit.

Water and air move through the upper part of the Grantsburg soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1.5 to 3.5 feet from February through April in most years. Available water capacity is moderate. Organic matter content is low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used for hay or pasture. Some are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is poorly suited to dwellings with basements and to septic tank absorption fields and is moderately suited to dwellings without basements.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

Adapted pasture and hay crops grow well on this soil. Overgrazing reduces forage yields, causes surface compaction and excessive runoff, and increases the susceptibility to erosion. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and control erosion.

If this soil is used as woodland, protection from fire and grazing is essential. The seedling mortality rate can be reduced by selecting planting stock that is larger than is typical or by mulching. Some replanting may be needed. Harvesting methods that do not isolate the remaining trees or leave them widely spaced help to prevent windthrow. Competing vegetation can be controlled by chemicals or by mechanical methods. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the seasonal high water table is a limitation. Installing subsurface drains around the footings can lower the water table. The shrink-swell potential is a limitation on sites for dwellings without basements. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIe.

308B—Alford silt loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on interfluves and knolls in the uplands. Individual areas range from 4 to 100 acres in size.

Typically, the surface layer is brown, friable silt loam about 9 inches thick. The subsoil is about 49 inches of strong brown, friable silt loam and silty clay loam. It is mottled in the lower part. The underlying material to a depth of 60 inches is strong brown, friable silt loam. In places the subsoil is thinner. In some areas the lower part of the subsoil is mottled. In other areas it has more sand.

Included with this soil in mapping are small areas of the moderately well drained, very slowly permeable Hosmer soils. These soils have a brittle layer in the lower part of the subsoil. They are in landscape positions similar to those of the Alford soil. They make up 3 to 7 percent of the unit.

Water and air move through the Alford soil at a moderate rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. Some are wooded. This soil is well suited to cultivated crops, to hay and

pasture, and to woodland. It is moderately suited to dwellings and well suited to septic tank absorption fields.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

A cover of grasses and legumes improves tilth and helps to control erosion. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIe.

308B2—Alford silt loam, 2 to 5 percent slopes, eroded. This gently sloping, well drained soil is on narrow interfluves and side slopes along drainageways on uplands. Individual areas range from 3 to 60 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsoil to a depth of 60 inches is strong brown, firm and friable silty clay loam. In some areas the subsoil is thinner. In other areas it is mottled. In places the lower part of the subsoil has more sand.

Included with this soil in mapping are small areas of the moderately well drained, very slowly permeable Hosmer soils. These soils have a brittle layer in the lower part of the subsoil. They are in landscape positions similar to those of the Alford soil. They make up 3 to 7 percent of the unit.

Water and air move through the Alford soil at a moderate rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is moderately suited to dwellings and well suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting, terraces, and contour farming help to control erosion. Incorporating crop residue into the soil or adding other organic material helps to prevent crusting and improves tilth. A crop rotation that includes a deep-rooted legume improves tilth and helps to prevent surface compaction.

A cover of grasses and legumes improves tilth and helps to control erosion. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIe.

308C2—Alford silt loam, 5 to 10 percent slopes, eroded. This sloping, well drained soil is on side slopes in the uplands. Individual areas range from 4 to 25 acres in size.

Typically, the surface layer is dark yellowish brown, friable silt loam about 5 inches thick. The subsoil is about 40 inches thick. It is yellowish brown and friable. The upper part is silty clay loam, and the lower part is silt loam. The underlying material to a depth of 60 inches is yellowish brown, friable silt loam. In some areas, the subsoil is thinner and free carbonates are within a depth of 40 inches. In severely eroded areas the surface layer has more clay. In places the lower part of the subsoil has more sand.

Included with this soil in mapping are small areas of the moderately well drained, very slowly permeable Hosmer soils and the somewhat poorly drained Belknap soils. Belknap soils are in drainageways below the Alford soil. Hosmer soils have a brittle layer in the lower part of the subsoil. They are in landscape positions similar to those of the Alford soil. Included soils make up 3 to 10 percent of the unit.

Water and air move through the Alford soil at a moderate rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used as woodland or pasture. Some

are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture. It is well suited to woodland and to habitat for openland wildlife. It is moderately suited to dwellings and well suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Also, the slope is a limitation in the steeper areas. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Cutting, filling, and land shaping help to overcome the slope.

The land capability classification is IIIe.

308C3—Alford silty clay loam, 5 to 10 percent slopes, severely eroded. This sloping, well drained soil is on side slopes in the uplands. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 3 to 80 acres in size.

Typically, the surface layer is strong brown, friable silty clay loam about 5 inches thick. The subsoil is about 37 inches thick. The upper part is strong brown, firm silty clay loam, and the lower part is yellowish brown, friable silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable silt loam. In some areas, the subsoil is thinner and free carbonates are within a depth of 40 inches.

Included with this soil in mapping are small areas of the moderately well drained, very slowly permeable Hosmer soils and the somewhat poorly drained Belknap soils. Belknap soils are in drainageways below the Alford soil. Hosmer soils have a brittle layer in the lower part of the subsoil. They are in landscape positions similar to those of the Alford soil. Included soils make up 3 to 10 percent of the unit.

Water and air move through the Alford soil at a moderate rate. Surface runoff is medium. Available water capacity is high. Organic matter content is low. The surface layer is tends to puddle and crust after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is poorly suited to cultivated crops and moderately suited to hay and pasture. It is well suited to woodland and to woodland wildlife habitat. It is moderately suited to dwellings and well suited to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Also, the slope is a limitation in the steeper areas. Extending foundation

footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Cutting, filling, and land shaping help to overcome the slope.

The land capability classification is IVe.

308D2—Alford silt loam, 10 to 18 percent slopes, eroded. This strongly sloping, well drained soil is on side slopes in the uplands. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer is dark yellowish brown, friable silt loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is strong brown, friable and firm silty clay loam, and the lower part is strong brown and yellowish brown, firm and friable silt loam. In some areas the lower part of the subsoil has grayish mottles. In other areas the subsoil is thinner and is calcareous in the lower part. In places the subsoil has more sand and has some gravel.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap and Wakeland soils. These soils are in drainageways and on flood plains below the Alford soil. They make up 3 to 7 percent of the unit.

Water and air move through the Alford soil at a moderate rate. Surface runoff is rapid. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used as pasture or woodland. This soil is poorly suited to cultivated crops. It is moderately suited to hay and pasture and well suited to woodland. It is moderately suited to dwellings and septic tank absorption fields.

In areas used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the slope and the shrink-swell potential are limitations. Cutting, filling, and land shaping help to overcome the slope. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The slope is a limitation if this soil is used as a site for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IVe.

308D3—Alford silty clay loam, 10 to 18 percent slopes, severely eroded. This strongly sloping, well drained soil is on side slopes in the uplands. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 3 to 30 acres in size.

Typically, the surface layer is yellowish brown, friable silty clay loam about 7 inches thick. The subsoil is about 15 inches thick. It is strong brown and friable. The upper part is silty clay loam, and the lower part is silt loam. The underlying material to a depth of 60 inches is dark brown and yellowish brown, friable silt loam. In uneroded areas the surface layer is silt loam and is darker. In some areas free carbonates are within a depth of 40 inches. In places the subsoil has more sand and has some gravel.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap and Wakeland soils. These soils are in drainageways and on flood plains below the Alford soil. They make up 3 to 7 percent of the unit.

Water and air move through the Alford soil at a moderate rate. Surface runoff is rapid. Available water capacity is high. Organic matter content is low. The surface layer becomes cloddy if it is tilled when too wet

or when hard and dry. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is generally unsuited to cultivated crops because of the hazard of erosion. It is poorly suited to hay and pasture. It is well suited to woodland. It is moderately suited to dwellings and septic tank absorption fields.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the slope and the shrink-swell potential are limitations. Cutting, filling, and land shaping help to overcome the slope. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The slope is a limitation if this soil is used as a site for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is VIe.

337—Creal silt loam. This nearly level, somewhat poorly drained soil is on foot slopes in the uplands. Individual areas range from 3 to 120 acres in size.

Typically, the surface layer is brown, friable silt loam about 10 inches thick. The subsurface layer is brown, mottled, friable silt loam about 12 inches thick. The subsoil is about 46 inches thick. It is light brownish gray, mottled, and friable. The upper part is silty clay loam, and the lower part is silt loam. The underlying material to a depth of 60 inches is light brownish gray, mottled, friable silt loam. In some areas the subsoil has more clay. In other areas the lower part of the subsoil is dense and brittle.

Included with this soil in mapping are small areas of the poorly drained Racoon soils. These soils are in the lower areas. They make up 10 to 15 percent of the unit.

Water and air move through the Creal soil at a moderately slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 1 to 3 feet from February through May in most years. Available water capacity is very high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal wetness delays planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface compaction and reduces the rate of water infiltration. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations. Tile drains can lower the water table. Enlarging the absorption area helps to overcome the moderately slow permeability. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIw.

339F—Wellston silt loam, 18 to 30 percent slopes. This steep, well drained soil is on side slopes in the uplands. Individual areas range from 10 to 40 acres in size.

Typically, the surface layer is dark brown, friable silt loam about 4 inches thick. The subsurface layer is dark yellowish brown, friable silt loam about 5 inches thick. The subsoil is about 31 inches thick. It is friable. The upper part is brown silt loam, the next part is strong brown silty clay loam, and the lower part is strong

brown loam and channery loam. The underlying material is brown, friable very channery loam about 7 inches thick. Sandstone and siltstone bedrock is at a depth of about 47 inches. In some areas the subsoil has more sand. In other areas the bedrock is at a depth of more than 60 inches.

Included with this soil in mapping are small areas of the well drained Berks and moderately well drained Zanesville soils. Berks soils are shallower over bedrock than the Wellston soil. They are on the steeper slopes. Zanesville soils have brittle layers in the lower part of the subsoil. They are in landscape positions similar to those of the Wellston soil. Also included are small areas of loamy alluvial soils in drainageways below the Wellston soil. Included soils make up 10 to 15 percent of the unit.

Water and air move through the Wellston soil at a moderate rate. Surface runoff is rapid. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are wooded. Some are used as pasture. This soil is well suited to woodland and moderately suited to pasture. It is generally unsuited to cultivated crops, dwellings, and septic tank absorption fields because of the slope.

Erosion control is needed when grasses and legumes are becoming established in the pastured areas. In areas where the pasture is established, seeding legumes on the contour improves the quality of the forage and helps to control erosion. A permanent cover of pasture plants helps to control erosion and maintain tilth. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as woodland, the hazard of erosion and an equipment limitation are management concerns. Plant competition also is a management concern. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Firebreaks should be the grass type. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soil is firm enough to support the equipment. 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.

The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

The land capability classification is VIe.

340C2—Zanesville silt loam, 5 to 10 percent slopes, eroded. This sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsoil is about 68 inches thick. In sequence downward, it is yellowish brown, friable silt loam and silty clay loam; yellowish brown, firm silty clay loam that has many silt coatings; strong brown, mottled, firm, brittle silty clay loam; and dark yellowish brown and strong brown, mottled, firm, brittle silt loam. Sandstone bedrock is at a depth of about 74 inches. In some areas the lower part of the subsoil is less brittle. In other areas, the soil is deeper over bedrock and the lower part of the subsoil formed in glacial till.

Included with this soil in mapping are small areas of somewhat poorly drained soils. These soils are in the less sloping areas. They make up 8 to 10 percent of the unit.

Water and air move through the upper part of the Zanesville soil at a moderate rate and through the lower part at a moderately slow or slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 2 to 3 feet from December through April in most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains, especially in cultivated areas, because it contains subsoil material. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are used as pasture or woodland. Some are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as woodland, seedling mortality and windthrow are management concerns. The seedling mortality rate can be reduced by planting species that can withstand the moderate available water capacity, which results from a high content of clay in the subsoil. Harvesting methods that do not isolate the remaining trees or leave them widely spaced reduce the hazard of windthrow. Only high-value trees should be removed from a strip 50 feet wide along the west and south edges of the woodland. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the seasonal high water table is a limitation. Installing subsurface drains around the footings can lower the water table.

The seasonal high water table and the restricted permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed and the site is leveled.

The land capability classification is IIIe.

340C3—Zanesville silt loam, 5 to 10 percent slopes, severely eroded. This sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from 5 to 80 acres in size.

Typically, the surface layer is brown, friable silt loam about 4 inches thick. The subsoil extends to a depth of more than 60 inches. It is yellowish brown. The upper part is firm silty clay loam, and the lower part is mottled, firm, brittle silt loam and loam having common sandstone and shale fragments. In some areas gray mottles are in the upper part of the subsoil. In other areas a thin layer of glacial till overlies the bedrock.

Included with this soil in mapping are small areas of somewhat poorly drained soils in the less sloping areas. They make up 8 to 10 percent of the unit.

Water and air move through the upper part of the Zanesville soil at a moderate rate and through the lower part at a moderately slow or slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 2 to 3 feet from December through April in most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains because it contains subsoil material. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is poorly suited to cultivated crops and moderately suited to hay and pasture. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as woodland, seedling mortality and windthrow are management concerns. The seedling mortality rate can be reduced by planting species that can withstand the moderate available water capacity, which results from a high content of clay in the subsoil. Harvesting methods that do not isolate the remaining trees or leave them widely spaced reduce the hazard of windthrow. Only high-value trees should be removed from a strip 50 feet wide along the west and south edges of the woodland. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover,

alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the seasonal high water table is a limitation. Installing subsurface drains around the footings can lower the water table.

The seasonal high water table and the restricted permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed and the site is leveled.

The land capability classification is IVe.

340D2—Zanesville silt loam, 10 to 18 percent slopes, eroded. This strongly sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from 3 to 30 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 4 inches thick. The subsoil is about 50 inches thick. The upper part is yellowish brown, friable silt loam; the next part is yellowish brown, firm silty clay loam; and the lower part is strong brown and yellowish brown, mottled, firm, brittle silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable loam that has sandstone fragments. In some areas the lower part of the subsoil formed in glacial till. In other areas the subsoil is less brittle.

Included with this soil in mapping are small areas of the well drained Berks soils on the steeper slopes. These soils do not have brittle layers in the lower part of the subsoil and are shallower over bedrock than the Zanesville soil. They make up 10 to 15 percent of the unit.

Water and air move through the upper part of the Zanesville soil at a moderate rate and through the lower part at a moderately slow or slow rate. Surface runoff is rapid. A perched seasonal high water table is at a depth of 2 to 3 feet from December through April in most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains, especially in cultivated areas. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are used as pasture or woodland. This soil is poorly suited to cultivated crops and moderately suited to pasture, hay, and woodland. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the seasonal high water table and the slope are limitations. Installing subsurface tile drains around the footings can lower the water table. Limited cutting and land shaping can overcome the slope.

The seasonal high water table, the restricted permeability, and the slope are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed and the site is leveled.

The land capability classification is IVe.

340D3—Zanesville silt loam, 10 to 18 percent slopes, severely eroded. This strongly sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from 3 to 40 acres in size.

Typically, the surface layer is yellowish brown, friable silt loam about 4 inches thick. The subsoil is about 36 inches thick. The upper part is brownish yellow, friable silty clay loam and yellowish brown, friable silt loam, and the lower part is light yellowish brown and yellowish brown, firm, brittle silt loam. Yellowish brown, weathered sandstone and shale bedrock is at a depth of about 40 inches. In some areas gray mottles are in the upper part of the subsoil. In other areas a thin layer of glacial till overlies the bedrock.

Included with this soil in mapping are small areas of the well drained Berks soils on the steeper slopes. These soils do not have brittle layers in the lower part of the subsoil and are shallower over bedrock than the Zanesville soil. They make up 10 to 15 percent of the unit.

Water and air move through the upper part of the Zanesville soil at a moderate rate and through the lower part at a moderately slow or slow rate. Surface runoff is rapid. A perched seasonal high water table is at a depth of 2 to 3 feet from December through April in most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains because it contains subsoil material. The shrink-swell potential is low, and the potential for frost action is high.

Most areas have been cultivated in the past but are presently used as pasture or are left idle. This soil is generally unsuited to cultivated crops because of the hazard of erosion. It is moderately suited to pasture, hay, and woodland. It is moderately suited to dwellings without basements and poorly suited to dwellings with basements and to septic tank absorption fields.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings, the seasonal high water table and the slope are limitations. Installing subsurface tile drains around the footings can lower the water table. Limited cutting and land shaping can overcome the slope.

The seasonal high water table, the restricted permeability, and the slope are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed and the site is leveled.

The land capability classification is VIe.

434A—Ridgway silt loam, 0 to 2 percent slopes. This nearly level, well drained soil is on broad rises on terraces. Individual areas range from 5 to 175 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is brown, dark yellowish brown, and yellowish brown, friable and firm silty clay loam; yellowish brown, friable clay loam; strong brown, very friable sandy loam; and alternating bands of yellowish brown, loose loamy sand and brown, very friable sandy loam. In some areas the surface layer has more sand. In other areas the depth to a seasonal high water table is less than 6 feet. In some places the surface layer is darker. In other places the lower part of the subsoil has less sand and more silt.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and poorly drained Sexton soils. These soils are lower on the landscape than the Ridgway soil. Henshaw soils are in nearly level areas, and Sexton soils are in shallow depressions. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Ridgway soil at a moderate rate and through the lower part at a rapid rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to septic tank absorption fields. It is moderately suited to dwellings.

Few limitations affect the use of this soil for corn, soybeans, or small grain. A conservation tillage system that leaves crop residue on the surface after planting helps to prevent surface crusting and maintains tilth.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The land capability classification is I.

434B—Ridgway silt loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on ridges on terraces. Individual areas range from 3 to 25 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsurface layer also is brown, friable silt loam. It is about 3 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is yellowish brown, friable silt loam; dark yellowish brown, firm silty clay loam; yellowish brown, friable silt loam; and yellowish brown, friable sandy loam that has bands of dark yellowish brown, loose sand and very friable loamy sand. In some areas the upper part of the subsoil has more sand. In other areas the depth to a seasonal high water table is less than 6 feet.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and poorly drained Ruark and Sexton soils. These soils are lower on the landscape than the Ridgway soil. Also, Ruark soils have more sand throughout. Included soils make up 2 to 10 percent of the unit.

Water and air move the upper part of the Ridgway soil at a moderate rate and through the lower part at a rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, hay, pasture, woodland, and septic tank absorption fields. It is moderately suited to dwellings.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIe.

434C2—Ridgway silt loam, 5 to 10 percent slopes, eroded. This sloping, well drained soil is on the side slopes of terraces. Individual areas range from 3 to 15 acres in size.

Typically, the surface layer is brown, friable silt loam about 8 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is yellowish brown, friable and firm silty clay loam; the next part is yellowish brown, firm loam; and the lower part occurs as alternating bands of yellowish brown, very friable loamy sand and dark yellowish brown, friable sandy loam. In places the surface layer has more clay. In some areas the subsoil has less sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw soils. These soils have a silty layer that is thicker than that of the Ridgway soil. They are in nearly level areas below the Ridgway soil. They make up 2 to 8 percent of the unit.

Water and air move the upper part of the Ridgway soil at a moderate rate and through the lower part at a rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops, to hay and pasture, and to dwellings. It is well suited to woodland and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Also, the slope is a limitation in the steeper areas. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Cutting, filling, and land shaping help to overcome the slope.

The slope is a limitation if the more sloping areas of this soil are used as sites for septic tank absorption fields. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IIIe.

436A—Meadowbank silt loam, 0 to 2 percent slopes. This nearly level, well drained soil is on broad rises on stream terraces. Individual areas range from 5 to 250 acres in size.

Typically, the surface soil is very dark brown and very dark grayish brown, friable silt loam about 19 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is dark yellowish brown, friable and firm silty clay loam; brown, firm loam; strong brown, friable sandy loam; and alternating bands of light yellowish brown, loose sand and strong brown and yellowish brown, very friable loamy sand and sandy loam. In some areas the lower part of the subsoil has less sand. In other areas the surface layer and subsoil have more sand. In places the surface layer is lighter colored.

Included with this soil in mapping are small areas of the somewhat excessively drained Dickinson and somewhat poorly drained Newhaven soils. Dickinson soils are in landscape positions similar to those of the Meadowbank soil. They have more sand throughout than the Meadowbank soil. Newhaven soils are in the slightly lower areas. Included soils make up 3 to 7 percent of the unit.

Water and air move through the upper part of the Meadowbank soil at a moderate rate and through the lower part at a rapid rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to septic tank absorption fields. It is moderately suited to dwellings.

Few limitations affect the use of this soil for corn, soybeans, or small grain. A conservation tillage system that leaves crop residue on the surface after planting helps to prevent surface crusting and maintains tilth.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The land capability classification is I.

436B—Meadowbank silt loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on rises and knolls on stream terraces. Individual areas range from 3 to 12 acres in size.

Typically, the surface soil is very dark grayish brown and dark brown, friable silt loam about 17 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is brown and strong brown, firm silty clay loam; strong brown, firm loam; strong brown, friable sandy loam; and alternating bands of yellowish brown, loose sand and dark brown, friable sandy loam. In some areas the lower part of the subsoil has less sand. In other areas the surface layer and subsoil have more sand. In places the surface layer is lighter colored.

Included with this soil in mapping are small areas of the somewhat poorly drained Newhaven soils. These soils are in the more nearly level areas below the Meadowbank soil. They make up 3 to 7 percent of the unit.

Water and air move through the upper part of the Meadowbank soil at a moderate rate and through the lower part at a rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to septic tank absorption fields. It is moderately suited to dwellings.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are contour farming and a system of conservation tillage that leaves crop residue on the surface after planting. 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 help to maintain tilth and fertility.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIe.

445—Newhaven loam. This nearly level, somewhat poorly drained soil is on slight rises on terraces. Individual areas range from 3 to 25 acres in size.

Typically, the surface soil is very dark grayish brown, friable loam about 15 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. In sequence downward, it is brown, friable loam; brown and grayish brown, firm clay loam; brown, friable sandy loam; and alternating bands of yellowish brown, very friable loamy sand and dark brown, friable sandy loam. In some areas the surface soil and the upper part of the

subsoil have less sand. In places the surface soil is lighter colored.

Included with this soil in mapping are small areas of the poorly drained Springerton soils. These soils are in the slightly lower areas. They make up 3 to 10 percent of the unit.

Water and air move through the upper part of the Newhaven soil at a moderate rate and through the lower part at a moderately rapid or rapid rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from February through June in most years. Available water capacity is high. Organic matter content also is high. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table can delay planting in the spring. Subsurface tile drains function satisfactorily if suitable outlets are available. Measures that maintain the drainage system are needed. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain productivity and tilth.

If this soil is used as a site for dwellings, the seasonal high water table is a limitation. Installing subsurface tile drains near the foundations helps to overcome the wetness.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is I.

446—Springerton loam. This nearly level, poorly drained soil is on broad, low flats and in drainageways on terraces and lake plains. It is subject to ponding for brief periods from March through June. Individual areas range from 10 to 200 acres in size.

Typically, the surface soil is very dark gray and very dark grayish brown, friable loam about 19 inches thick. It is mottled in the lower part. The subsoil is about 26 inches thick. It is mottled and friable. The upper part is dark grayish brown loam and clay loam, and the lower part is light brownish gray loam. The underlying material to a depth of 60 inches is grayish brown, mottled, friable loam. In some areas the surface layer and subsoil have more clay and less sand. In other areas the surface layer is thinner. In places the subsoil has more clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Newhaven soils. These soils are on slight rises above the Springerton soil. They make up 2 to 10 percent of the unit.

Water and air move through the Springerton soil at a moderate rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is high. Organic matter content also is high. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to dwellings and septic tank absorption fields because of the ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

453B—Muren silt loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on the broad tops of ridges in the uplands. Individual areas range from 3 to 130 acres in size.

Typically, the surface layer is brown, friable silt loam about 9 inches thick. The subsurface layer is yellowish brown, friable silt loam about 5 inches thick. The subsoil is firm silty clay loam about 37 inches thick. The upper part is strong brown, and the lower part is yellowish brown and mottled. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable silt loam. In some areas a thin, dense, brittle layer is in the lower part of the subsoil. In other areas the soil has no gray mottles.

Included with this soil in mapping are small areas of somewhat poorly drained soils. These soils are in depressions or the more nearly level areas below the Muren soil. They make up 5 to 10 percent of the unit.

Water and air move through the Muren soil at a moderate rate. Surface runoff is medium. A seasonal high water table is at a depth of 2 to 6 feet in March and April of most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to puddle and crust after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is poorly suited to septic tank absorption fields and to dwellings with basements. It is moderately suited to dwellings without basements.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue

on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

Adapted pasture and hay crops grow well on this soil. Overgrazing reduces forage yields, causes surface compaction and excessive runoff, and increases the susceptibility to erosion. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and control erosion.

If this soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing subsurface tile drains near the foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is IIe.

467B2—Markland silt loam, 2 to 5 percent slopes, eroded. This gently sloping, well drained soil is on short side slopes on lake plains. Individual areas range from 3 to 20 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsoil is about 33 inches thick. The upper part is yellowish brown, firm silty clay loam; the next part is yellowish brown and light olive brown, firm silty clay; and the lower part is yellowish brown, mottled, friable silty clay loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm, calcareous silty clay loam that has strata of silt loam. In some areas the subsoil has less clay. In other areas the underlying material has more sand. In places free carbonates are below a depth of 60 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils are slightly lower on the landscape than the Markland soil. They make up 5 to 8 percent of the unit.

Water and air move through the Markland soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 3 to 6 feet from December through April in most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains because it contains subsoil material. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Establishing pasture and hay crops helps to keep soil loss within tolerable limits. Seedbed preparation is difficult in areas on side slopes where the subsoil is exposed. A no-till method of seeding or pasture renovation helps in establishing forage species and in controlling erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIIe.

467C2—Markland silt loam, 5 to 10 percent slopes, eroded. This sloping, well drained soil is on short side slopes on lake plains. Individual areas range from 3 to 40 acres in size.

Typically, the surface layer is dark yellowish brown, friable silt loam about 8 inches thick. The subsoil is yellowish brown, firm silty clay about 31 inches thick. It is mottled in the lower part. The underlying material to a depth of 60 inches is light yellowish brown and yellowish brown, mottled, firm, calcareous silty clay. In some areas the soil has more sand throughout. In other areas the subsoil has less clay. In places the surface layer has more clay.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils are at the head of drainageways and in the less sloping

areas above or below the Markland soil. They make up 3 to 8 percent of the unit.

Water and air move through the Markland soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 3 to 6 feet from December through April in most years. Available water capacity is moderate. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains because it contains subsoil material. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is poorly suited to cultivated crops and to dwellings and septic tank absorption fields. It is moderately suited to hay and pasture. It is well suited to woodland and to woodland wildlife habitat.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as woodland, seedling mortality and windthrow are management concerns. The seedling mortality rate can be reduced by planting species that can withstand the moderate available water capacity, which results from a high content of clay in the subsoil. Harvesting methods that do not isolate the remaining trees or leave them widely spaced reduce the hazard of windthrow. Only high-value trees should be removed from a strip 50 feet wide along the west and south edges of the woodland. 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.

This soil is suitable for grain and seed crops, for wild herbaceous plants, and for the hardwood trees that are needed in areas of woodland wildlife habitat. Food plots of grain or seed crops should be established only in the less steep areas. Also, the crops should be planted on the contour. Measures that protect the habitat from fire and grazing are needed.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IVe.

467C3—Markland silty clay loam, 5 to 10 percent slopes, severely eroded. This sloping, well drained soil is on short side slopes on lake plains. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 3 to 30 acres in size.

Typically, the surface layer is strong brown, firm silty clay loam about 5 inches thick. The subsoil is mottled, firm silty clay about 31 inches thick. The upper part is strong brown and brown, and the lower part is yellowish brown and calcareous. The underlying material to a depth of 60 inches is brown, mottled, firm, calcareous, stratified silty clay loam and silt loam. In some areas the soil has more sand throughout. In other areas the subsoil has less clay. In places the surface layer has less clay.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils are at the head of drainageways and in the less sloping areas above or below the Markland soil. They make up 10 to 15 percent of the unit.

Water and air move through the Markland soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 3 to 6 feet from December through April in most years. Available water capacity is moderate. Organic matter content is low. The surface layer tends to crust and puddle after hard rains because it contains subsoil material. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is generally unsuited to cultivated crops and is only moderately suited to hay and pasture because of the hazard of erosion. It is well suited to woodland and to woodland wildlife habitat. It is poorly suited to dwellings and septic tank absorption fields.

Establishing pasture or hay crops helps to keep

erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as woodland, seedling mortality and windthrow are management concerns. The seedling mortality rate can be reduced by planting species that can withstand the moderate available water capacity, which results from a high content of clay in the subsoil. Harvesting methods that do not isolate the remaining trees or leave them widely spaced reduce the hazard of windthrow. Only high-value trees should be removed from a strip 50 feet wide along the west and south edges of the woodland. 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.

This soil is suitable for grain and seed crops, for wild herbaceous plants, and for the hardwood trees that are needed in areas of woodland wildlife habitat. Food plots of grain or seed crops should be established only in the less steep areas. Also, the crops should be planted on the contour. Measures that protect the habitat from fire and grazing are needed.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending foundation footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is VIe.

482B—Uniontown silt loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on knolls on lake plains and stream terraces. Individual areas range from 3 to 140 acres in size.

Typically, the surface layer is brown, friable silt loam about 9 inches thick. The subsurface layer is yellowish brown, mottled, friable silt loam about 4 inches thick. The subsoil is about 23 inches thick. It is friable. The upper part is dark yellowish brown and yellowish brown silty clay loam, and the lower part is yellowish brown, mottled silt loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable, calcareous silt loam. In some areas the lower part of the subsoil and the underlying material have more sand. In other areas, the subsoil is thicker and free carbonates are below a depth of 60 inches. In places the subsoil is not mottled.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and poorly drained Patton soils. These soils are lower on the landscape than the Uniontown soil. Also, Patton soils have a darker surface layer. Included soils make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Uniontown soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 2.5 to 6.0 feet from November through May in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is moderately suited to septic tank absorption fields and to dwellings with basements. It is well suited to dwellings without basements.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

Adapted pasture and hay crops grow well on this soil. Overgrazing reduces forage yields, causes surface compaction and excessive runoff, and increases the susceptibility to erosion. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and control erosion.

If this soil is used as a site for dwellings with basements, the seasonal high water table is a limitation. Installing subsurface tile drains near the foundation helps to overcome this limitation.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability.

The land capability classification is IIe.

482B2—Uniontown silt loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil is on knolls and side slopes on lake plains and stream terraces. Individual areas range from 3 to 160 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsoil is about 34 inches thick. It is friable. The upper part is yellowish brown silty clay loam; the next part is light olive brown, mottled silt loam; and the lower part is light yellowish brown, mottled, calcareous silt. The underlying material to a depth of 60 inches is light yellowish brown, mottled, friable, calcareous silt. In some areas the lower part of the subsoil and the underlying material have more sand. In other areas, the subsoil is thicker and free carbonates are below a depth of 60 inches. In places the subsoil is not mottled.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and poorly drained Patton soils. These soils are lower on the landscape than the Uniontown soil. Also, Patton soils have a darker surface layer. Included soils make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Uniontown soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is slow. A seasonal high water table is at a depth of 2.5 to 6.0 feet from November through May in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is moderately suited to septic tank absorption fields and to dwellings with basements. It is well suited to dwellings without basements.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

Adapted pasture and hay crops grow well on this soil. Overgrazing reduces forage yields, causes surface compaction and excessive runoff, and increases the susceptibility to erosion. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and control erosion.

If this soil is used as a site for dwellings with basements, the seasonal high water table is a limitation. Installing subsurface tile drains near the foundation helps to overcome this limitation.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability.

The land capability classification is IIe.

482C2—Uniontown silt loam, 5 to 10 percent slopes, eroded. This sloping, moderately well drained soil is on side slopes on lake plains and stream terraces. Individual areas range from 3 to 35 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsoil is yellowish brown, firm silty clay loam about 32 inches thick. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable, calcareous silt loam. In severely eroded areas the surface layer has more clay. In some areas the lower part of the subsoil and the underlying material have more sand. In other areas the subsoil has more clay. In some places, the subsoil is thicker and free carbonates are below a depth of 60 inches. In other places the subsoil is not mottled.

Included with this soil in mapping are small areas of the somewhat poorly drained Wakeland soils. These soils are in drainageways below the Uniontown soil. They make up 3 to 7 percent of the unit.

Water and air move through the upper part of the Uniontown soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 2.5 to 6.0 feet from November through May in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture. It is well suited to woodland, to woodland wildlife habitat, and to dwellings without basements. It is moderately suited to dwellings with basements and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings with basements, the seasonal high water table is a limitation. Also, the slope is a limitation in the steeper areas. Installing subsurface tile drains around the foundation can lower the water table. Cutting, filling, and land shaping help to overcome the slope.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table, the moderately slow permeability, and the slope are limitations. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability. Installing the filter lines on the contour or cutting and filling help to overcome the slope.

The land capability classification is IIIe.

482C3—Uniontown silty clay loam, 5 to 10 percent slopes, severely eroded. This sloping, moderately well drained soil is on side slopes on lake plains and stream terraces. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas range from 3 to 45 acres in size.

Typically, the surface layer is dark yellowish brown, friable silty clay loam about 7 inches thick. The subsoil is about 27 inches thick. It is yellowish brown. The upper part is firm silty clay loam, and the lower part is mottled, friable silt loam. The underlying material to a depth of 60 inches is light yellowish brown, mottled, friable, calcareous silt loam. In some areas the lower part of the subsoil and the underlying material have more sand. In some places the subsoil has more clay. In other places it is not mottled.

Included with this soil in mapping are small areas of the somewhat poorly drained Wakeland soils. These soils are in drainageways below the Uniontown soil. They make up 3 to 7 percent of the unit.

Water and air move through the upper part of the Uniontown soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 2.5 to 6.0 feet from November through May in most years. Available water capacity is high. Organic matter content is low. The surface layer tends to crust and puddle after hard rains because it contains subsoil material. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is poorly suited to cultivated crops and moderately suited to hay and pasture. It is well suited to woodland, to woodland wildlife habitat, and to dwellings without basements. It is moderately suited to dwellings with basements and to septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover,

alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for dwellings with basements, the seasonal high water table is a limitation. Also, the slope is a limitation in the steeper areas. Installing subsurface tile drains around the foundation can lower the water table. Cutting, filling, and land shaping help to overcome the slope.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table, the moderately slow permeability, and the slope are limitations. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability. Installing the filter lines on the contour or cutting and filling help to overcome the slope.

The land capability classification is IVe.

483—Henshaw silt loam. This nearly level, somewhat poorly drained soil is on slight rises on lake plains. Individual areas range from 3 to 220 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsurface layer is brownish yellow, friable silt loam about 5 inches thick. The subsoil is mottled silty clay loam about 33 inches thick. The upper part is yellowish brown and is friable and firm, and the lower part is grayish brown and friable. The underlying material to a depth of 60 inches is grayish brown, mottled, friable, calcareous silty clay loam. In some areas the subsoil has more clay. In other areas the lower part of the subsoil and the underlying material have more sand. In some places free carbonates are below a depth of 60 inches. In other places the underlying material has more silt and less clay.

Included with this soil in mapping are small areas of the well drained Ridgway, moderately well drained Uniontown, and poorly drained Patton soils. Ridgway and Uniontown soils are on ridges above the Henshaw soil. Patton soils are in drainageways and nearly level or slightly depressional areas below the Henshaw soil. They have a surface layer that is darker than that of the Henshaw soil. Included soils make up 10 to 15 percent of the unit.

Water and air move through the Henshaw soil at a moderately slow rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 2 feet from November through March in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability.

The land capability classification is IIw.

484—Harco silt loam. This nearly level, somewhat poorly drained soil is on slight rises on lake plains. Individual areas range from 3 to 60 acres in size.

Typically, the surface layer is very dark gray, friable silt loam about 8 inches thick. The subsurface layer is black, mottled, firm silty clay loam about 11 inches thick. The subsoil is mottled silty clay loam about 24 inches thick. The upper part is light olive brown and firm, and the lower part is light brownish gray and friable. The underlying material to a depth of 60 inches is light brownish gray, mottled, friable, calcareous silt loam. In some areas the subsoil has more clay. In other areas the depth to a seasonal high water table is more than 3 feet. In places the lower part of the subsoil and the underlying material have more sand.

Included with this soil in mapping are small areas of the poorly drained Patton and very poorly drained Montgomery soils. These soils are in the lower areas and in slight depressions below the Harco soil. Their surface layer has more clay than that of the Harco soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Harco soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from February through April in most years. Available water capacity is

high. Organic matter content also is high. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table can delay planting in spring. Subsurface tile drains function satisfactorily if suitable outlets are available. Measures that maintain the drainage system are needed. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain productivity and tilth.

If this soil is used as a site for dwellings, the seasonal high water table is a limitation. Installing subsurface tile drains near the foundations helps to overcome the wetness.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is I.

585F—Negley loam, 18 to 30 percent slopes. This very steep, well drained soil is on the side slopes of drainageways on uplands. Individual areas range from 3 to 30 acres in size.

Typically, the surface layer is very dark grayish brown, friable loam about 3 inches thick. The subsurface layer is brown and strong brown, friable loam about 12 inches thick. The subsoil extends to a depth of more than 60 inches. It is yellowish red and friable. The upper part is loam, and the lower part is sandy clay loam. In some areas the surface layer has less sand. In other areas the subsoil formed in glacial till.

Water and air move through the Negley soil at a moderate or moderately rapid rate. Surface runoff is very rapid. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is moderate.

Most areas are wooded. Some are used as pasture. This soil is moderately suited to woodland, hay, and pasture. It is generally unsuited to cultivated crops, dwellings, and septic tank absorption fields because of the hazard of erosion and the slope.

Establishing pasture plants helps to control erosion. Proper stocking rates, rotation grazing, and timely deferment of grazing help to prevent overgrazing and excessive runoff and erosion. The plants should not be grazed or clipped until they are sufficiently established. Planting the pasture species on the contour helps to control erosion.

If this soil is used as woodland, the hazard of erosion and an equipment limitation are management concerns. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soil is firm enough to support the equipment. 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. Firebreaks should be the grass type.

The land capability classification is VIe.

750A—Skelton fine sandy loam, 0 to 2 percent slopes. This nearly level, well drained soil is on slight rises and broad flats on stream terraces and lake plains. Individual areas range from 3 to 45 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is strong brown, friable clay loam; the next part is strong brown, friable sandy loam; and the lower part occurs as alternating bands of yellowish brown, loose loamy sand and dark yellowish brown, very friable sandy loam. In some areas the subsoil has less clay. In other areas the surface layer and the upper part of the subsoil have more silt and less sand. In places the subsoil has more clay.

Included with this soil in mapping are small areas of the poorly drained Sexton and Ruark and somewhat poorly drained Crawleyville soils. These soils are lower on the landscape than the Skelton soil. Also, Sexton soils have more silt and less sand in the surface layer and subsoil. Included soils make up 5 to 15 percent of the unit.

Water and air move through the upper part of the Skelton soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are cultivated. This soil is well suited to cultivated crops. It is moderately suited to dwellings and septic tank absorption fields.

Few limitations affect the use of this soil for corn, soybeans, or small grain. A conservation tillage system that leaves crop residue on the surface after planting helps to prevent surface crusting and maintains tilth.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to

prevent the structural damage caused by shrinking and swelling.

The moderate permeability is a limitation if this soil is used as a site for septic tank absorption fields. Increasing the size of the absorption field or replacing the soil with material that is more permeable helps to overcome this limitation.

The land capability classification is I.

750B—Skelton fine sandy loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on ridges on stream terraces and lake plains. Individual areas range from 3 to 40 acres in size.

Typically, the surface layer is brown, very friable fine sandy loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is dark yellowish brown, very friable fine sandy loam; strong brown, firm clay loam; yellowish brown, friable loam and sandy loam; and alternating bands of yellowish brown, very friable loamy sand and dark yellowish brown, very friable sandy loam. In some areas the surface layer and the upper part of the subsoil have more silt and less sand. In other areas the subsoil has less clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Crawleyville and poorly drained Ruark and Sexton soils. These soils are lower on the landscape than the Skelton soil. Also, Sexton soils have more silt and less sand in the surface layer and subsoil. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Skelton soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is moderately suited to dwellings and septic tank absorption fields.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The moderate permeability is a limitation if this soil is used as a site for septic tank absorption fields. Increasing the size of the absorption field or replacing the soil with material that is more permeable helps to overcome this limitation.

The land capability classification is IIe.

750C2—Skelton fine sandy loam, 5 to 10 percent slopes, eroded. This sloping, well drained soil is on side slopes on stream terraces and lake plains. Individual areas range from 3 to 25 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 6 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is yellowish brown, firm clay loam; yellowish brown, friable loam; yellowish brown, very friable sandy loam; and alternating bands of yellowish brown, very friable loamy sand and dark yellowish brown, very friable sandy loam. In some areas the surface layer and the upper part of the subsoil have more silt and less sand. In other areas the subsoil has less clay.

Included with this soil in mapping are small areas of the poorly drained Ruark soils. These soils are in drainageways below the Skelton soil. They make up 3 to 7 percent of the unit.

Water and air move through the upper part of the Skelton soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are cultivated. This soil is well suited to hay, pasture, and woodland. It is moderately suited to cultivated crops, dwellings, and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. Also, the slope is a limitation in the steeper areas. Extending foundation

footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Cutting, filling, and land shaping help to overcome the slope.

The moderate permeability is a limitation if this soil is used as a site for septic tank absorption fields. Increasing the size of the absorption field or replacing the soil with material that is more permeable helps to overcome this limitation. The slope is a limitation in the more sloping areas. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IIIe.

751—Crawleyville fine sandy loam. This nearly level, somewhat poorly drained soil is on broad rises on terraces. Individual areas range from 4 to 60 acres in size.

Typically, the surface layer is brown, very friable fine sandy loam about 10 inches thick. The subsurface layer is brown, mottled, very friable fine sandy loam about 5 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. The upper part is brown, friable loam; the next part is grayish brown, firm clay loam; and the lower part is grayish brown, firm loam. In some areas the subsoil has less clay. In places the surface soil and the upper part of the subsoil have more silt and less sand.

Included with this soil in mapping are small areas of the well drained Skelton and poorly drained Ruark soils. Skelton soils are on the crest of ridges above the Crawleyville soil. Ruark soils are in drainageways and nearly level or slightly depressional areas below the Crawleyville soil. Included soils make up 2 to 10 percent of the unit.

Water and air move through the Crawleyville soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from December through May in most years. Available water capacity is high. Organic matter content is moderately low. In cultivated areas the surface tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, to woodland, and to woodland wildlife habitat. It is poorly suited to dwellings and septic tank absorption fields.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The seasonal high water table is a limitation if this soil is used as a site for dwellings. Installing subsurface drains around the footings can lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table is a limitation. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is IIw.

784F—Berks loam, 18 to 30 percent slopes. This steep, well drained soil is on side slopes in the uplands. Individual areas range from 5 to 45 acres in size.

Typically, the surface layer is dark brown, friable loam about 1 inch thick. The subsoil is friable channery loam about 15 inches thick. The upper part is dark yellowish brown, and the lower part is yellowish brown. The underlying material is yellowish brown, friable very channery loam about 16 inches thick. Thinly bedded sandstone, siltstone, and shale bedrock is at a depth of about 32 inches. In places the subsoil formed mostly in shale residuum and has more clay.

Included with this soil in mapping are small areas of rock outcrop and small areas where stones are on the surface and the soil is shallow over bedrock. These areas are steeper than the Berks soil and are near streams. Also included, on narrow ridge crests, are areas where the subsoil is thicker and has fewer rock fragments. Included areas make up 5 to 15 percent of the unit.

Water and air move through the Berks soil at a moderate rate. Surface runoff is very rapid. Available water capacity is moderate. Organic matter content is moderately low. The root zone is 20 to 40 inches thick. The shrink-swell potential and the potential for frost action are low.

Most areas are wooded. Some are used as pasture. This soil is moderately suited to pasture and woodland. It is generally unsuited to cultivated crops, dwellings, and septic tank absorption fields because of the hazard of erosion, the slope, and the depth to bedrock.

Erosion control is needed when grasses and legumes are becoming established in the pastured areas. In areas where the pasture is established, seeding legumes on the contour improves the quality of the forage and helps to control erosion. A permanent cover of pasture plants helps to control erosion and maintains tilth. Operating machinery is difficult on the steeper slopes. Selection of suitable species for planting, proper stocking rates, pasture rotation, timely deferment of

grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as woodland, the hazard of erosion, an equipment limitation, and seedling mortality are management concerns. Plant competition also is a management concern. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Firebreaks should be the grass type. Machinery should be used only when the soil is firm enough to support the equipment. The seedling mortality rate can be reduced by planting species that can withstand droughty conditions, by eliminating all competing vegetation near the seedlings, and by selecting the larger seedlings for planting. 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.

The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

The land capability classification is VIe.

802B—Orthents, loamy, nonacid, 1 to 7 percent slopes. These moderately fine textured to moderately coarse textured, very poorly drained to well drained soils have been modified by filling and leveling. They generally are gently sloping or sloping. They are strongly sloping, however, in a few areas near interstate cloverleafs and built-up roads on flood plains. Individual areas range from 3 to 150 acres in size.

Included with these soils in mapping are narrow, strongly sloping to steep areas and small areas of intermittent water. Included areas make up 10 to 25 percent of the unit.

This map unit is not assigned a land capability classification.

865—Pits, gravel. This map unit consists of open excavations from which gravel and sand have been removed. Most of the pits are on the terraces and flood plains close to the Wabash River. The excavations are commonly 10 to 30 feet deep. Slopes range from 0 to 60 percent. Individual areas range from 3 to 110 acres in size.

Typically, the soil material is loamy or sandy and has been mixed or compacted during excavation. It is low in fertility and organic matter content. It generally supports little or no vegetation. In some areas, however, it supports trees, shrubs, grasses, and other plants. In some areas silty material has been mixed with the loamy or sandy material.

Included in mapping are perennial water areas smaller than 1 acre in size. These areas make up 10 to 40 percent of the unit.

Most of the acreage that is not currently excavated is idle land. Without major reclamation, the pits are generally unsuited to farming and building site development. Some areas are a good source of sand and gravel and are well suited to recreational uses. Some areas are well suited to hiking, camping, and fishing. If vegetation is to be established, special site preparation, such as land smoothing and leveling and topdressing with surface soil material, may be needed.

This map unit is not assigned a land capability classification.

898G—Sylvan-Hickory complex, 30 to 50 percent slopes. These very steep, well drained soils are on side slopes along drainageways in the uplands. The Sylvan soil is on side slopes above the Hickory soil. The Sylvan soil makes up about 45 percent of the unit and the Hickory soil 40 percent. The two soils occur as areas so closely intermingled or so small that mapping them separately is not practical. Individual areas range from 5 to 150 acres in size.

Typically, the surface layer of the Sylvan soil is brown, friable silt loam about 2 inches thick. The subsurface layer is yellowish brown, friable silt loam about 11 inches thick. The subsoil is about 22 inches thick. It is strong brown. The upper part is firm and friable silty clay loam, and the lower part is friable silt loam. The underlying material to a depth of 60 inches is yellowish brown, friable, calcareous silt. In some areas the underlying material is stratified with fine sand. In other areas, the subsoil is thicker and free carbonates are at a depth of more than 60 inches.

Typically, the surface layer of the Hickory soil is very dark grayish brown, friable silt loam about 4 inches thick. The subsurface layer is dark yellowish brown, friable silt loam about 6 inches thick. The subsoil to a depth of more than 60 inches is firm clay loam. The upper part is strong brown, and the lower part is strong brown and yellowish brown and is mottled. In some areas the surface layer has more sand.

Included with these soils in mapping are small areas of the well drained Berks, somewhat poorly drained Belknap, and somewhat excessively drained Bloomfield soils. Berks soils formed entirely in bedrock residuum. They are on slopes below the Hickory soil. Belknap soils are in drainageways below the Hickory soil. Bloomfield soils are closely intermingled with areas of the Sylvan soil on Dogtown Hill. They formed in sandy

windblown material. Included soils make up about 15 percent of the unit.

Water and air move through the Sylvan and Hickory soils at a moderate rate. Surface runoff is very rapid. Available water capacity is very high. Organic matter content is moderately low. The shrink-swell potential is moderate. The potential for frost action is high in the Sylvan soil and moderate in the Hickory soil.

Most areas are wooded. These soils are well suited to woodland and to woodland wildlife habitat. They are generally unsuited to cultivated crops, dwellings, and septic tank absorption fields because of the hazard of erosion and the slope.

If these soils are used as woodland, the hazard of erosion, an equipment limitation, and seedling mortality are management concerns. Plant competition also is a management concern. Logging roads and skid trails should be established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Firebreaks should be the grass type. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soils are firm enough to support the equipment. The seedling mortality rate can be reduced by planting species that can withstand droughty conditions, by eliminating all competing vegetation near the seedlings, and by selecting the larger seedlings for planting. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soils, and damage to tree roots.

The dense stands of timber provide good habitat for woodland wildlife. These soils are suitable for wild herbaceous plants and hardwood trees. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

The land capability classification is VIIe.

929D3—Ava-Hickory complex, 10 to 18 percent slopes, severely eroded. These strongly sloping soils are on side slopes along drainageways in the uplands. The moderately well drained Ava soil is on the upper parts of most slopes and on the lower parts of a few slopes. The well drained Hickory soil is on the lower parts of most slopes. The Ava soil makes up about 45 percent of the unit and the Hickory soil 40 percent. The two soils occur as areas so closely intermingled or so small that mapping them separately is not practical. Individual areas range from 5 to 40 acres in size.

Typically, the Ava soil has a surface layer of mixed dark yellowish brown and brown, friable silt loam about 8 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is yellowish brown, friable silt loam and silty clay loam, and the lower part is yellowish brown and brownish yellow, firm, brittle silt loam. Some areas are gullied. In places the surface layer has more clay.

Typically, the Hickory soil has a surface layer of dark yellowish brown, friable clay loam about 3 inches thick. The subsoil to a depth of more than 60 inches is yellowish brown clay loam. The upper part is friable, and the lower part is mottled and firm. Some areas are gullied. In places the surface layer has less clay.

Included with these soils in mapping are small areas of somewhat poorly drained soils. These included soils have more clay in the subsoil than the Ava and Hickory soils. They are on the lower parts of the slopes and at the head of drainageways. Also included are narrow areas of alluvial soils that are along drainageways and are subject to flooding, small areas of soils that are shallow over bedrock, and areas where slopes are more than 18 percent. The shallow and steeper soils are commonly near streams. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Hickory soil at a moderate rate. They move through the upper part of the Ava soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is rapid on both soils. A perched seasonal high water table is at a depth of 1.5 to 3.5 feet in the Ava soil from March through June in most years. Available water capacity is moderate in the Ava soil and high in the Hickory soil. Organic matter content is low in both soils. The surface layer of both soils tends to crust after heavy rains. The shrink-swell potential is moderate in both soils. The potential for frost action is high in the Ava soil and moderate in the Hickory soil.

Most areas are cultivated or are used as pasture. These soils are poorly suited to cultivated crops. They are moderately suited to pasture and well suited to woodland. The Ava soil is poorly suited to septic tank absorption fields and to dwellings with basements. It is moderately suited to dwellings without basements. The Hickory soil is moderately suited to dwellings and septic tank absorption fields.

If these soils are used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soils and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

The moderate shrink-swell potential in both soils and

the seasonal wetness in the Ava soil are limitations on sites for dwellings. Reinforcing footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains around the foundations lowers the water table. The slope is an additional limitation. Cutting and filling help to overcome this limitation.

The seasonal wetness and very slow permeability in the Ava soil and the moderate permeability in the Hickory soil are limitations on sites for septic tank absorption fields. The slope also is a limitation. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed and the site leveled.

The land capability classification is IVe.

1288—Petrolia silty clay loam, wet. This nearly level, very poorly drained soil is in sloughs on flood plains. It is frequently flooded for very long periods from March through June. Individual areas range from 3 to 500 acres in size.

Typically, the surface layer is very dark grayish brown, firm silty clay loam about 6 inches thick. The underlying material to a depth of 60 inches is mottled silty clay loam and silt loam. The upper part is dark grayish brown and firm, and the lower part is gray and friable. In some areas the lower part of the underlying material has more clay. In other areas the soil is strongly acid. In places it has less clay throughout.

Included with this soil in mapping are small areas of the somewhat poorly drained Newark soils. These soils are slightly higher on the landscape than the Petrolia soil. They make up 5 to 10 percent of the unit.

Water and air move through the Petrolia soil at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 3.0 feet below the surface from April through June in most years. Available water capacity is high. Organic matter content is moderate. The surface layer is firm and tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are wooded. Some have been cleared of trees and are cultivated. This soil is well suited to habitat for wetland and woodland wildlife and is moderately suited to woodland. It is generally unsuited to cultivated crops, dwellings, and septic tank absorption fields because of the flooding and ponding.

If this soil is used as woodland, an equipment limitation and seedling mortality are management concerns because of the seasonal high water table. Machinery should be used only when the soil is firm enough to support the equipment. The seedling mortality rate can be reduced by planting species that can withstand excessive wetness. Plant competition is an additional management concern. It retards the growth of desirable seedlings. The plant 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.

The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife. Some low areas in old oxbows and depressions are wet. Wetland plants and shallow water areas, which enhance wetland wildlife habitat, can be easily established in the oxbows and depressions.

The land capability classification is Vw.

3092—Sarpy sandy loam, frequently flooded. This nearly level, excessively drained soil is on slight rises on flood plains. It is frequently flooded for brief periods from November through June. Individual areas range from 5 to 35 acres in size.

Typically, the surface layer is brown, friable sandy loam about 8 inches thick. The underlying material to a depth of 60 inches is pale brown, loose, calcareous, stratified sand and fine sand. In some areas the surface layer and underlying material have less sand. In other areas the underlying material has bands of loam and silt loam.

Included with this soil in mapping are small areas of the well drained Armiesburg and Nolin and poorly drained Petrolia soils. These soils have more clay than the Sarpy soil. Also, they are slightly lower on the landscape. They make up 5 to 10 percent of the unit.

Water and air move through the Sarpy soil at a rapid rate. Surface runoff is slow. Available water capacity is low. Organic matter content is very low. The shrink-swell potential and the potential for frost action are low.

Most areas are wooded. Some are cultivated. This soil is poorly suited to cultivated crops and to woodland wildlife habitat. It is moderately suited to woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used as woodland, seedling mortality is a management concern. Because of the low available water capacity, the seedling mortality rate is high. It can be reduced by planting mature nursery stock and by clearing all vegetation within 2 feet of the planted seedlings. The use of equipment is limited to periods when the soil is firm. Excluding livestock from the

woodland helps to prevent destruction of the leaf mulch and of desirable young trees and damage to tree roots. Measures that protect the woodland from fire are needed.

If this soil is used for corn, soybeans, or small grain, soil blowing is a hazard and the low available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting, winter cover crops, and field windbreaks help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

The land capability classification is IVs.

3103—Houghton muck, frequently flooded. This nearly level, very poorly drained soil is in sloughs and old river channels on flood plains. It is frequently flooded for very long periods from October through May. Individual areas range from 5 to 70 acres in size.

Typically, the surface layer is black, friable, highly decomposed muck about 25 inches thick. The subsoil to a depth of 60 inches is black and very dark brown, friable muck. In some areas the decomposed organic material is thinner. In other areas the subsoil has more sand.

Included with this soil in mapping are some areas of the poorly drained Ambraw soils. These soils are in landscape positions similar to those of the Houghton soil. They are subject to flooding. They make up 5 to 10 percent of the unit.

Water and air move through the Houghton soil at a moderate rate. Surface runoff is slow. A seasonal high water table is within a depth of 1 foot from September through June in most years. Available water capacity is very high. Organic matter content also is very high. This soil is very unstable. It is highly compressible when supporting a heavy load and is subject to subsidence when drained. The potential for frost action is high.

Most of the acreage is idle land. This soil is generally unsuited to cultivated crops because of flooding and wetness. It is generally unsuited to dwellings and septic tank absorption fields because of low strength, ponding, subsidence, and flooding.

This soil has good potential for the development of habitat for wetland wildlife. The native plant species provide food and cover for wetland wildlife.

The land capability classification is VIIIw.

3108—Bonnie silt loam, frequently flooded. This nearly level, poorly drained soil is on broad, low flats on flood plains. It is frequently flooded for brief periods from January through June. Individual areas range from 3 to 2,265 acres in size.

Typically, the surface layer is grayish brown and dark grayish brown, mottled, friable silt loam about 5 inches thick. The underlying material is mottled, friable silt loam about 49 inches thick. The upper part is grayish brown, and the lower part is light brownish gray. Below this to a depth of 60 inches is a buried soil of grayish brown, mottled, friable silty clay loam. In places the soil has more clay throughout. In some areas it is less frequently flooded. In other areas, such as those on the Sevenmile Flats, the soil is not subject to flooding but is ponded by runoff from the surrounding uplands.

Included with this soil in mapping are small areas of the somewhat poorly drained Banlic soils. These soils are slightly higher on the landscape than the Bonnie soil. They have brittle layers within a depth of 60 inches. They make up 10 to 15 percent of the unit.

Water and air move through the Bonnie soil at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 1.0 foot below the surface from January through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. Some are used as woodland. This soil is moderately suited to cultivated crops and is well suited to woodland and to wetland and woodland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

Corn and soybeans can be grown in most areas of this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface ditches or subsurface drains reduce the wetness. The flooding is a hazard, but it occurs only occasionally during the growing season. Soil blowing also is a hazard. It can be controlled by leaving crop residue on the surface and by establishing windbreaks. Tilling when the soil is wet causes surface cloddiness and compaction. Minimizing tillage and returning crop residue to the soil improve tilth and increase the rate of water infiltration.

If this soil is used as woodland, an equipment limitation, seedling mortality, and windthrow are management concerns because of the seasonal high water table. Plant competition also is a concern. It retards the growth of desirable seedlings. Machinery should be used only when the soil is firm enough to support the equipment. The seedling mortality rate can be reduced by planting species that can withstand excessive wetness. Harvesting methods that do not isolate the remaining trees or leave them widely spaced reduce the hazard of windthrow. Only high-value trees should be removed from a strip 50 feet wide along the

west and south edges of the woodland. The plant 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.

The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife. Some low areas in old oxbows and depressions are wet. Wetland plants and shallow water areas, which enhance wetland wildlife habitat, can be easily established in the oxbows and depressions.

The land capability classification is IIIw.

3142—Patton silty clay loam, frequently flooded. This nearly level, poorly drained soil is on broad, low flats on lake plains. It is frequently flooded for brief periods from December through May. Individual areas range from 4 to 3,025 acres in size.

Typically, the surface layer is very dark grayish brown, friable silty clay loam about 10 inches thick. The subsurface layer is very dark grayish brown, mottled, firm silty clay loam about 6 inches thick. The subsoil is mottled, friable silty clay loam about 32 inches thick. The upper part is dark grayish brown, the next part is grayish brown, and the lower part is gray. The underlying material to a depth of 60 inches is grayish brown, mottled, friable silty clay loam. In some areas the surface layer is lighter colored. In other areas the subsoil has more clay. Some areas have recently received overwash of light colored silt loam. In places the soil has more sand throughout.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and moderately well drained Uniontown soils. These soils are higher on the landscape than the Patton soil. Also, they have a lighter colored surface layer. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Patton soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is slow to ponded. The seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is very high. Organic matter content is high. The surface layer may become compact and cloddy if it is plowed when too wet. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the flooding and ponding.

Corn and soybeans can be grown on this soil because a drainage system has been installed. Floodwater delays spring planting in most years. Levees or diversions can reduce the hazard of flooding in some small areas. A combination of surface ditches and subsurface drains decreases the wetness and helps to remove floodwater. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The land capability classification is IIIw.

3178—Ruark loam, frequently flooded. This nearly level, poorly drained soil is on broad, low flats on terraces and lake plains. It is frequently flooded for brief periods from December through May. Individual areas range from 3 to 150 acres in size.

Typically, the surface layer is brown, friable loam about 8 inches thick. The subsurface layer is light brownish gray, mottled, friable loam about 11 inches thick. The subsoil is about 40 inches thick. It is mottled and firm. The upper part is light brownish gray and light gray clay loam, and the lower part is light gray loam. The underlying material to a depth of 60 inches is light gray, mottled, friable sandy loam. In some areas the subsoil has more clay. In other areas it has less clay and more sand. In some places the surface layer is darker. In other places the upper part of the subsoil is browner.

Included with this soil in mapping are small areas of the well drained Alvin and Skelton soils. These soils are higher on the landscape than the Ruark soil. Also, Alvin soils have more sand. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Ruark soil at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through July in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is well suited to habitat for wetland wildlife. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

Corn and soybeans can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land

leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

Some small ponded areas of this soil provide good habitat for wetland wildlife. Grain and seed crops, wild herbaceous plants, wetland plants, and other important habitat elements are available. Ducks, herons, frogs, turtles, and snakes are attracted to these areas.

The land capability classification is IVw.

3231—Evansville silt loam, frequently flooded. This nearly level, poorly drained soil is on broad, low flats on lake plains. It is frequently flooded for brief periods from December through April. Individual areas range from 8 to 170 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The subsoil is grayish brown, mottled, firm silty clay loam about 37 inches thick. The underlying material to a depth of 60 inches is light brownish gray and yellowish brown, mottled, firm silty clay loam. In some areas the surface layer is darker. In other areas the subsoil has more clay. In places the soil has more sand throughout.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and moderately well drained Uniontown soils. These soils are higher on the landscape than the Evansville soil. They make up 5 to 10 percent of the unit.

Water and air move through the Evansville soil at a moderate rate. Surface runoff is slow to ponded. The seasonal high water table is 0.5 foot above to 1.0 foot below the surface from January through May in most years. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the flooding and ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

3302—Ambraw loam, frequently flooded. This nearly level, poorly drained soil is on low flats and in narrow drainageways on flood plains. It is frequently flooded for long periods from March through June. Individual areas range from 4 to 70 acres in size.

Typically, the surface layer is very dark grayish brown, firm loam about 11 inches thick. The subsoil is dark gray, mottled, firm clay loam about 38 inches thick. The underlying material to a depth of 60 inches is dark gray, mottled, friable sandy loam. In some areas the surface layer has more clay. In other areas the soil has less sand throughout.

Included with this soil in mapping are small areas that are subject to ponding and remain wet for most of the year. These areas are slightly lower on the landscape than the Ambraw soil. They make up less than 5 percent of the unit.

Water and air move through the Ambraw soil at a moderately slow rate. Surface runoff is slow. A seasonal high water table is within 2 feet of the surface from March through June in most years. Available water capacity is high. Organic matter content is moderate. The surface layer may become compact and cloddy if it is plowed when too wet. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops and well suited to wetland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

A drainage system has been installed in areas used for soybeans, corn, or small grain. Measures that maintain or improve the drainage system are needed. Surface ditches or subsurface drains reduce the wetness. The flooding delays planting in most years. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions helps to maintain yields. Tilling when the soil is wet causes surface cloddiness and compaction. Minimizing tillage and returning crop residue to the soil improve tilth and increase the rate of water infiltration.

Some small ponded areas of this soil provide good habitat for wetland wildlife. Grain and seed crops, wild herbaceous plants, wetland plants, and other important habitat elements are available. Ducks, herons, frogs, turtles, and snakes are attracted to these areas.

The land capability classification is IVw.

3304—Landes sandy loam, frequently flooded. This nearly level, well drained soil is on slight rises on flood plains. It is frequently flooded for brief periods from January through June. Individual areas range from 3 to 110 acres in size.

Typically, the surface soil is very dark grayish brown, friable sandy loam about 19 inches thick. The subsoil is about 18 inches thick. The upper part is brown, friable sandy loam, and the lower part is dark yellowish brown, very friable loamy sand. The underlying material

extends to a depth of more than 60 inches. The upper part is dark yellowish brown, loose sand and dark yellowish brown, very friable sandy loam, and the lower part is pale brown, loose, calcareous sand. In places the upper part of the subsoil is darker. In some areas the soil has more clay. In other areas the surface soil is lighter colored.

Included with this soil in mapping are small areas of Armiesburg soils and small areas of the somewhat poorly drained Newark soils. Armiesburg soils are higher on the landscape than the Landes soil, and Newark soils are lower on the landscape. Both of the included soils have more clay and less sand than the Landes soil. They make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Landes soil at a moderately rapid rate and through the lower part at a rapid rate. Surface runoff is slow. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain, flooding and soil blowing are hazards. Also, the moderate available water capacity is a limitation. A conservation tillage system that leaves crop residue on the surface after planting helps to control soil blowing. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions reduces the extent of the crop damage caused by floodwater. Irrigation can improve crop production.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The land capability classification is IIIw.

3331—Haymond silt loam, frequently flooded. This nearly level, well drained soil is on flood plains. It is frequently flooded for brief periods from January through May. Individual areas range from 3 to 90 acres in size.

Typically, the surface layer is brown, friable silt loam about 8 inches thick. The subsoil is brown and yellowish brown, friable silt loam about 33 inches thick. Below this to a depth of 60 inches or more is a buried soil of yellowish brown, friable loam. In some areas the material below the subsoil is stratified silt loam and loam. In other areas the soil has more sand throughout.

Included with this soil in mapping are small areas of the well drained Drury and somewhat poorly drained Wakeland soils. Drury soils are at the base of uplands above the Haymond soil. Wakeland soils are in shallow depressions below the Haymond soil. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Haymond soil at a moderate rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain, the flooding is a hazard. Dikes or diversions can reduce the extent of the crop damage caused by floodwater. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions also reduces the extent of this damage. Keeping tillage to a minimum and returning crop residue to the soil help to maintain tilth and productivity.

The land capability classification is IIw.

3333—Wakeland silt loam, frequently flooded. This nearly level, somewhat poorly drained soil is on flood plains. It is frequently flooded for brief periods from January through May. Individual areas range from 5 to 200 acres in size.

Typically, the surface layer is brown, friable silt loam about 10 inches thick. The underlying material to a depth of 60 inches is brown and light brownish gray, mottled, friable silt loam. In some areas a buried soil is within a depth of 40 inches. In other areas the underlying material is more acid. In some places the upper part of the underlying material is browner. In other places the soil has more clay throughout.

Included with this soil in mapping are small areas of Henshaw soils and small areas of the moderately well drained Uniontown soils. Included soils are on the side slopes of lake plains adjacent to the flood plains. They make up 5 to 10 percent of the unit.

Water and air move through the Wakeland soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 1.0 to 3.0 feet from January through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to

cultivated crops. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table or the flooding delays planting in most years. Crops are occasionally damaged by flooding. The seasonal high water table can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and excessive runoff and erosion. Returning crop residue to the soil and minimizing tillage help to maintain good tilth and increase the rate of water infiltration.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The land capability classification is IIw.

3382—Belknap silt loam, frequently flooded. This nearly level, somewhat poorly drained soil is on slight rises on flood plains. It is frequently flooded for brief periods from January through June. Individual areas range from 3 to 560 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The underlying material to a depth of 60 inches is mottled, friable silt loam. The upper part is yellowish brown, the next part is light brownish gray, and the lower part is light gray. In some areas the upper part of the underlying material is grayer. In other areas the underlying material has more clay.

Included with this soil in mapping are small areas of the slowly permeable Banlic soils and the poorly drained Bonnie soils. Banlic soils are on the slightly higher parts of the landscape. They are brittle in the lower part of the subsoil. Bonnie soils are in the lower areas at the base of the uplands. Included soils make up 3 to 10 percent of the unit.

Water and air move through the Belknap soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from January through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated or wooded. This soil is well suited to cultivated crops and to woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table or the flooding delays planting in most years. Crops are occasionally damaged by flooding. The seasonal high water table can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and excessive runoff and erosion. Returning crop residue to the soil and minimizing tillage help to maintain good tilth and increase the rate of water infiltration.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The land capability classification is IIIw.

3420—Piopolis silty clay loam, frequently flooded. This nearly level, poorly drained soil is on low flats on flood plains. It is frequently flooded for long periods from March through June. Individual areas range from 10 to 300 acres in size.

Typically, the surface layer is dark grayish brown, firm silty clay loam about 9 inches thick. The underlying material to a depth of 60 inches is light brownish gray and light gray, mottled, firm silty clay loam. In some areas the soil has less clay throughout. In some places the underlying material has more clay. In other places the upper part of the underlying material is browner.

Included with this soil in mapping are small areas that are subject to ponding and remain wet for most of the year. These areas make up about 15 percent of the unit.

Water and air move through the Piopolis soil at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 3.0 feet below the surface from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer is firm and tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are wooded. This soil is poorly suited to cultivated crops and to woodland. It is moderately suited to wetland and woodland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

If this soil is used as woodland, an equipment limitation, seedling mortality, and windthrow are management concerns because of the seasonal high water table. Plant competition also is a concern. It

retards the growth of desirable seedlings. Machinery should be used only when the soil is firm enough to support the equipment. The seedling mortality rate can be reduced by planting species that can withstand excessive wetness. Harvesting methods that do not isolate the remaining trees or leave them widely spaced reduce the hazard of windthrow. Only high-value trees should be removed from a strip 50 feet wide along the west and south edges of the woodland. The plant 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.

In wooded areas along Skillet Fork, the existing stands of trees provide habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

Some small ponded areas of this soil provide good habitat for wetland wildlife. Grain and seed crops, wild herbaceous plants, wetland plants, and other important habitat elements are available. Ducks, herons, frogs, turtles, and snakes are attracted to these areas.

The land capability classification is IVw.

3465—Montgomery silty clay, frequently flooded. This nearly level, very poorly drained soil is on broad flats and in shallow depressions on lake plains. It is frequently flooded for brief periods from December through May. Individual areas range from 10 to 100 acres in size.

Typically, the surface soil is very dark gray, firm silty clay about 14 inches thick. It is mottled in the lower part. The subsoil is about 43 inches thick. It is mottled. The upper part is very dark grayish brown and dark grayish brown, firm silty clay; the next part is olive gray, firm silty clay; and the lower part is grayish brown, friable, calcareous silty clay loam. The underlying material to a depth of 60 inches is light gray, mottled, friable, calcareous silty clay loam. In places the surface layer is lighter colored. Some areas have recently received overwash of light colored silt loam.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils have a surface layer that is lighter colored than that of the Montgomery soil. They are on slight rises above the Montgomery soil. They make up 3 to 8 percent of the unit.

Water and air move through the Montgomery soil at a slow rate. Surface runoff is very slow or ponded. A seasonal high water table is 1 foot above to 1 foot below the surface from December through May in most years. Available water capacity is high. Organic matter content also is high. The surface layer is firm and can be easily tilled only within a narrow range of moisture content. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is moderately suited to cultivated crops and well suited to habitat for wetland wildlife. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

If this soil is used for corn or soybeans, the flooding is a hazard and the seasonal high water table is a limitation. The flooding and the wetness delay planting in most years. The flooding causes occasional crop damage. Dikes or diversions can reduce the extent of the crop damage caused by floodwater in some years. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions also reduces the extent of this damage. A combination of surface ditches and subsurface tile drains reduces the wetness. Keeping tillage to a minimum and returning crop residue to the soil help to maintain tilth and productivity.

Some small ponded areas of this soil provide good habitat for wetland wildlife. Grain and seed crops, wild herbaceous plants, wetland plants, and other important habitat elements are available. Ducks, herons, frogs, turtles, and snakes are attracted to these areas.

The land capability classification is IIIw.

3524—Zipp silty clay, frequently flooded. This nearly level, very poorly drained soil is on lake plains. It is frequently flooded for brief periods from December through May. Individual areas range from 20 to 5,000 acres in size.

Typically, the surface layer is dark grayish brown, firm silty clay about 8 inches thick. The subsoil is light gray and gray, mottled, firm silty clay about 40 inches thick. The underlying material to a depth of 60 inches is light gray, mottled, firm silty clay. In some areas the surface layer is darker. In other areas the subsoil has less clay. In places the surface layer is covered by recent overwash of silt loam.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils are on slight rises above the Zipp soil. They make up 5 to 10 percent of the unit.

Water and air move through the Zipp soil at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 1.0 foot below the surface from December through May in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer is firm and cannot

be easily tilled. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and well suited to wetland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

If this soil is used for corn or soybeans, the flooding is a hazard and the seasonal high water table is a limitation. The flooding and the wetness delay planting in most years. The flooding causes occasional crop damage. Dikes or diversions can reduce the extent of the crop damage caused by floodwater in some years. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions also reduces the extent of this damage. A combination of surface ditches and subsurface tile drains reduces the wetness. Keeping tillage to a minimum and returning crop residue to the soil help to maintain tilth and productivity.

Some small ponded areas of this soil provide good habitat for wetland wildlife. Grain and seed crops, wild herbaceous plants, wetland plants, and other important habitat elements are available. Ducks, herons, frogs, turtles, and snakes are attracted to these areas.

The land capability classification is IIIw.

3597—Armiesburg silty clay loam, frequently flooded. This nearly level, well drained soil is on rises on flood plains. It is frequently flooded for brief periods from October through June. Individual areas range from 3 to 350 acres in size.

Typically, the surface soil is very dark grayish brown, friable silty clay loam about 21 inches thick. The subsoil to a depth of 60 inches is brown and dark yellowish brown, friable silty clay loam. In some areas the surface layer is lighter colored and thinner. In other areas it has less clay. In places the subsoil has more sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Newark soils. These soils are in drainageways below the Armiesburg soil. Also included, along drainageways, are long, narrow areas where slopes are as much as 7 percent. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Armiesburg soil at a moderate rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to woodland and is moderately suited to openland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain, the flooding is a hazard. Dikes or diversions can reduce the extent of the crop damage caused by floodwater. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions also reduces the extent of this damage. Keeping tillage to a minimum and returning crop residue to the soil help to maintain tilth and productivity.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover.

The land capability classification is IIw.

3601—Nolin silty clay loam, frequently flooded. This nearly level, well drained soil is on rises on flood plains. It is frequently flooded for brief periods from February through May. Individual areas range from 3 to 325 acres in size.

Typically, the surface layer is brown, friable silty clay loam about 9 inches thick. The subsoil is dark yellowish brown, friable silty clay loam about 42 inches thick. The underlying material to a depth of 60 inches is dark yellowish brown, friable silt loam. In some areas the surface layer is darker and thicker. In other areas the subsoil and underlying material have more sand and less clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Newark soils. These soils are in drainageways below the Nolin soil. Also included, along drainageways, are long, narrow areas where slopes are as much as 7 percent. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Nolin soil at a moderate rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to woodland and is moderately suited to openland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain,

the flooding is a hazard. Dikes or diversions can reduce the extent of the crop damage caused by floodwater. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions also reduces the extent of this damage. Keeping tillage to a minimum and returning crop residue to the soil help to maintain tilth and productivity.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover.

The land capability classification is IIw.

3602—Newark silty clay loam, frequently flooded. This nearly level, somewhat poorly drained soil is in drainageways and depressions on flood plains. It is frequently flooded for long periods from January through April. Individual areas range from 3 to 125 acres in size.

Typically, the surface layer is dark grayish brown, firm silty clay loam about 10 inches thick. The subsoil is mottled, firm silty clay loam about 27 inches thick. The upper part is brown, and the lower part is dark grayish brown. The underlying material to a depth of 60 inches is grayish brown, mottled, friable silty clay loam. In some areas the subsoil and underlying material have less clay. In other areas the surface layer is darker.

Included with this soil in mapping are small areas of the well drained Nolin and very poorly drained Petrolia soils. Nolin soils are on slight rises above the Newark soil. Petrolia soils are in depressions and sloughs below the Newark soil. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Newark soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 0.5 foot to 1.5 feet from December through May in most years. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated or wooded. This soil is well suited to cultivated crops and to woodland and is moderately suited to wetland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn or soybeans, the flooding is a hazard and the seasonal high water table is a limitation. The flooding delays planting in most years and causes occasional crop damage. Dikes or diversions can reduce the extent of the crop damage caused by floodwater in some years. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions also reduces the extent of this damage. Subsurface tile drains function satisfactorily if suitable outlets are available. Keeping tillage to a minimum and returning crop residue to the soil help to maintain tilth and productivity.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife. Some low areas in old oxbows and depressions are wet. Wetland plants and shallow water areas, which enhance wetland wildlife habitat, can be easily established in the oxbows and depressions.

The land capability classification is IIIw.

3665—Stonelick loam, frequently flooded. This nearly level, well drained soil is on slight rises on flood plains. It is frequently flooded for brief periods from November through June. Individual areas range from 3 to 250 acres in size.

Typically, the surface layer is brown, friable, calcareous loam about 9 inches thick. The underlying material to a depth of 60 inches is dark yellowish brown, very friable, and calcareous. The upper part is sandy loam, and the lower part is stratified sand to sandy loam. In some areas the underlying material has more silt and less sand. In other areas the surface layer is darker and thicker.

Included with this soil in mapping are small areas of the somewhat poorly drained Newark soils. These soils are in drainageways below the Stonelick soil. Also included, along drainageways, are long, narrow areas where slopes are as much as 7 percent. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Stonelick soil at a moderately rapid rate. Surface runoff is slow. Available

water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is moderate.

Most areas are cultivated or wooded. This soil is moderately suited to cultivated crops and to woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain, flooding and soil blowing are hazards. Also, the moderate available water capacity is a limitation. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions reduces the extent of the crop damage caused by floodwater. A conservation tillage system that leaves crop residue on the surface after planting helps to control soil blowing. Irrigation can improve crop production.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The land capability classification is IIIw.

7087—Dickinson fine sandy loam, rarely flooded. This nearly level, somewhat excessively drained soil is on stream terraces. It is subject to rare flooding. Individual areas range from 4 to 65 acres in size.

Typically, the surface layer is very dark grayish brown, friable fine sandy loam about 11 inches thick. The subsoil is about 23 inches thick. It is friable. The upper part is brown and dark yellowish brown sandy loam, and the lower part is dark yellowish brown loamy sand. The underlying material to a depth of 60 inches is yellowish brown, loose sand and dark yellowish brown, friable loamy sand. In some areas the surface soil is thicker. In other areas the subsoil is thicker and has more clay. In places the surface layer and subsoil have less sand and more silt.

Included with this soil in mapping are small areas of the somewhat poorly drained Newhaven soils. These soils are lower on the landscape than the Dickinson soil. They make up 3 to 8 percent of the unit.

Water and air move through the upper part of the Dickinson soil at a moderately rapid rate and through the lower part at a rapid rate. Surface runoff is slow. Available water capacity is low. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, soil blowing is a hazard and the low available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting and winter cover crops help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

If this soil is used as a site for septic tank absorption fields, a poor filtering capacity in the underlying material can result in the pollution of ground water. A septic tank system functions satisfactorily only if a sealed sand filter and a disinfection tank are installed.

The land capability classification is IIIs.

7109—Racoon silt loam, rarely flooded. This nearly level, poorly drained soil is on lake plains, terraces, and uplands. It is subject to ponding for brief periods from March through June and to rare flooding. Individual areas range from 5 to 200 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The subsurface layer is gray and light gray, mottled, friable silt loam about 17 inches thick. The subsoil to a depth of more than 60 inches is light gray, mottled, friable silty clay loam. In some areas the subsoil has more clay. In other areas it has less clay and more silt. In places 20 to 35 inches of silty alluvial material overlies lacustrine sediments of silty clay loam.

Included with this soil in mapping are small areas of the somewhat poorly drained Bluford and Creal soils. These soils are higher on the landscape than the Racoon soil. Also, Bluford soils have more clay. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Racoon soil at a moderately slow rate and through the lower part at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 1.0 foot below the surface from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. Some small areas are used as woodland. This soil is moderately suited to cultivated crops and to woodland. Because of the

flooding and ponding, it is generally unsuited to dwellings and is poorly suited to septic tank absorption fields.

Corn and soybeans can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface ditches or subsurface drains reduce the wetness. Soil blowing is a hazard. It can be controlled by leaving crop residue on the surface and by establishing windbreaks. Tilling when the soil is wet causes surface cloddiness and compaction. Minimizing tillage and returning crop residue to the soil improve tilth and increase the rate of water infiltration.

The land capability classification is IIw.

7131A—Alvin fine sandy loam, 0 to 2 percent slopes, rarely flooded. This nearly level, well drained soil is on broad rises on terraces. It is subject to rare flooding. Individual areas range from 5 to 140 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark yellowish brown, friable fine sandy loam; the next part is brown and strong brown, friable sandy loam; and the lower part occurs as alternating bands of strong brown, loose sand and strong brown, very friable loamy sand. In some areas the subsoil has less sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Roby and poorly drained Ruark soils. These soils are in depressions and drainageways below the Alvin soil. They make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Alvin soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is slow. Available water capacity is moderate. Organic matter content is low. The shrink-swell potential also is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture. Because of the flooding, it is only moderately suited to septic tank absorption fields and is generally unsuited to dwellings.

If this soil is used for corn, soybeans, or small grain, soil blowing is a hazard and the moderate available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting and winter cover crops help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

The land capability classification is IIs.

7131B—Alvin fine sandy loam, 2 to 5 percent slopes, rarely flooded. This gently sloping, well drained soil is on ridges on terraces. It is subject to rare flooding. Individual areas range from 3 to 20 acres in size.

Typically, the surface layer is dark brown, friable fine sandy loam about 8 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is brown and strong brown, friable sandy loam; the next part is strong brown, very friable loamy sand; and the lower part occurs as alternating bands of strong brown, loose sand and dark brown, very friable loamy sand. In some areas the subsoil is thinner and has less clay. In other areas it has more clay and silt and less sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Roby soils. These soils are in depressions and the more nearly level areas below the Alvin soil. They make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Alvin soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is moderate. Organic matter content is low. The shrink-swell potential also is low, and the potential for frost action is moderate.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture. Because of the flooding, it is only moderately suited to septic tank absorption fields and is generally unsuited to dwellings.

If this soil is used for corn, soybeans, or small grain, erosion and soil blowing are hazards. Also, the moderate available water capacity and the level of fertility are limitations. Erosion can be controlled and moisture conserved by a conservation tillage system that leaves crop residue on the surface after planting and by contour farming. A conservation tillage system that leaves crop residue on the surface after planting and winter cover crops help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent overgrazing, which increases the susceptibility to erosion and soil blowing. The plants should not be grazed until they are sufficiently established. Applications of fertilizer are needed.

The land capability classification is IIe.

7142—Patton silty clay loam, rarely flooded. This nearly level, poorly drained soil is on broad flats and in drainageways on lake plains. It is subject to ponding for brief periods from March through June and to rare flooding. Individual areas range from 4 to 350 acres in size.

Typically, the surface layer is very dark grayish brown, friable silty clay loam about 10 inches thick. The subsurface layer is very dark grayish brown, mottled, firm silty clay loam about 6 inches thick. The subsoil is mottled, friable silty clay loam about 32 inches thick. The upper part is dark grayish brown, the next part is grayish brown, and the lower part is gray. The underlying material to a depth of 60 inches is grayish brown, mottled, friable silty clay loam. In some areas the surface layer is lighter colored. In other areas the subsoil has more clay. Some areas have recently received overwash of light colored silt loam. In places the soil has more sand throughout.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and moderately well drained Uniontown soils. These soils are higher on the landscape than the Patton soil. Also, they have a lighter colored surface layer. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Patton soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is very high. Organic matter content is high. The surface layer may become compact and cloddy if it is plowed when too wet. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the flooding and ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal wetness delays planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

7142+—Patton silt loam, overwash, rarely flooded. This nearly level, poorly drained soil is on broad, low flats and in drainageways on lake plains. It is subject to ponding for brief periods from March through June and to rare flooding. Individual areas range from 3 to 165 acres in size.

Typically, the surface layer is brown, friable silt loam about 10 inches thick. The underlying material is dark grayish brown, dark gray, and brown, friable silt loam about 8 inches thick. Below this to a depth of 60 inches is a buried soil of mottled, firm silty clay loam. The upper part of the buried soil is very dark gray and very dark grayish brown, and the lower part is dark gray and gray. In some areas the soil has no light colored overwash or has a thinner layer of overwash. In other areas the buried soil has more sand throughout. In places the overwash is thicker.

Included with this soil in mapping are small areas of the moderately well drained Uniontown and somewhat poorly drained Henshaw soils. These soils are higher on the landscape than the Patton soil. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Patton soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is very high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the flooding and ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal wetness delays planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

7173A—McGary silt loam, 0 to 2 percent slopes, rarely flooded. This nearly level, somewhat poorly drained soil is on broad, slight rises on lake plains. It is subject to rare flooding. Individual areas range from 3 to 90 acres in size.

Typically, the surface layer is grayish brown, friable silt loam about 8 inches thick. The subsoil is mottled, firm silty clay about 31 inches thick. The upper part is brown, and the lower part is grayish brown and light brownish gray. The underlying material to a depth of 60 inches is light olive brown and yellowish brown, mottled, firm, calcareous silty clay loam. In some areas the soil has more sand throughout. In other areas the subsoil has less clay. In places the lower part of the subsoil is browner. In some areas along Skillet Fork south of Mills Shoals, the soil is frequently flooded.

Included with this soil in mapping are small areas of the very poorly drained Montgomery and Zipp and poorly drained Sexton soils. These soils are in slight depressions and in drainageways below the McGary soil. Montgomery and Zipp soils have more clay in the surface layer than the McGary soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the McGary soil at a slow rate. Surface runoff is slow. The seasonal high water table is 1 to 3 feet below the surface from January through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal wetness delays planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function well on this soil.

The land capability classification is IIw.

7173B—McGary silt loam, 2 to 5 percent slopes, eroded, rarely flooded. This gently sloping, somewhat poorly drained soil is on side slopes on lake plains. It is subject to rare flooding. Individual areas range from 3 to 35 acres in size.

Typically, the surface layer is dark yellowish brown, firm silt loam about 6 inches thick. The subsoil is about 27 inches thick. It is mottled. The upper part is brown, firm silty clay; the next part is grayish brown, very firm silty clay; and the lower part is grayish brown, firm silty clay loam. The underlying material to a depth of 60 inches is grayish brown, firm, calcareous silty clay loam. In places the upper part of the subsoil is more acid. In some areas along Skillet Fork south of Mills Shoals, the soil is frequently flooded.

Included with this soil in mapping are small areas of the well drained Markland and very poorly drained Zipp soils. Markland soils are in landscape positions similar to those of the McGary soil. Zipp soils are in slight depressions and in drainageways below the McGary soil. They have more clay in the surface layer than the McGary soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the McGary soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 1 to 3 feet from January through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. The seasonal high water table delays planting, however, in most years. Also, further erosion is a hazard. It can be controlled by a system of conservation tillage that leaves crop residue on the surface after planting and by contour farming. 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.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the slow permeability are limitations. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function well on this soil.

The land capability classification is IIe.

7176—Marissa silt loam, rarely flooded. This nearly level, somewhat poorly drained soil is on broad, low flats and in drainageways on lake plains and terraces. It is subject to rare flooding. Individual areas range from 5 to 140 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 10 inches thick. The subsurface layer is dark grayish brown, friable silt loam about 3 inches thick. The subsoil is about 44 inches thick. It is mottled. The upper part is dark grayish brown and light olive brown, firm silty clay loam, and the lower part is light olive brown, friable, calcareous silt loam. The underlying material to a depth of 60 inches is light olive brown, mottled, friable, calcareous silt loam. In places the soil has more sand throughout. In some areas the surface layer has more clay. In other areas it is lighter colored.

Included with this soil in mapping are small areas of the somewhat poorly drained Harco and Henshaw soils. These soils are on slight rises above the Marissa soil.

Harco soils have a subsurface layer that is darker than that of the Marissa soil. Henshaw soils have a surface layer that is lighter colored than that of the Marissa soil. Included soils make up 4 to 8 percent of the unit.

Water and air move through the Marissa soil at a moderate or moderately slow rate. Surface runoff is slow. A seasonal high water table is 1 to 3 feet below the surface from February through June in most years. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal wetness delays planting in some years. It can be reduced by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the restricted permeability are limitations. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIw.

7178—Ruark loam, rarely flooded. This nearly level, poorly drained soil is on broad, low flats and in drainageways on terraces and lake plains. It is subject to ponding for brief periods from March through June and to rare flooding. Individual areas range from 4 to 550 acres in size.

Typically, the surface layer is brown, friable loam about 8 inches thick. The subsurface layer is light brownish gray, mottled, friable loam about 11 inches thick. The subsoil is about 40 inches thick. It is mottled and firm. The upper part is light brownish gray and light gray clay loam, and the lower part is light gray loam. The underlying material to a depth of 60 inches is light gray, mottled, friable sandy loam. In some areas the subsoil has more clay. In other areas it has less clay and more sand. In places the surface layer is darker.

Included with this soil in mapping are small areas of the somewhat poorly drained Crawleyville and Roby soils. These soils are higher on the landscape than the Ruark soil. They make up 5 to 10 percent of the unit.

Water and air move through the Ruark soil at a moderately slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is generally unsuited to septic tank absorption fields and dwellings because of the flooding and ponding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The land capability classification is IIw.

7184—Roby fine sandy loam, rarely flooded. This nearly level, somewhat poorly drained soil is on broad rises on terraces and lake plains. It is subject to rare flooding. Individual areas range from 3 to 20 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 9 inches thick. The subsurface layer is dark yellowish brown, mottled, friable fine sandy loam about 4 inches thick. The subsoil is mottled, friable sandy loam about 22 inches thick. The upper part is yellowish brown, and the lower part is brown. The underlying material to a depth of 60 inches is mottled. The upper part is brown, very friable loamy sand, and the lower part is strong brown, loose sand. In some areas the subsoil has more silt and clay and less sand. In other areas the surface layer is darker.

Included with this soil in mapping are small areas of the well drained Alvin and poorly drained Ruark soils. Alvin soils are on the crest of ridges above the Roby soil. Ruark soils are in depressions and drainageways below the Roby soil. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Roby soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from March through June in most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain,

soil blowing is a hazard and the moderate available water capacity and the level of fertility are limitations. A conservation tillage system that leaves crop residue on the surface after planting, winter cover crops, and field windbreaks help to control soil blowing. Irrigation can improve crop production. Returning crop residue to the soil and regularly adding other organic material improve fertility.

If this soil is used as a site for septic tank absorption fields, the seasonal wetness is a limitation. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is IIs.

7208—Sexton silt loam, rarely flooded. This nearly level, poorly drained soil is on broad, low flats on stream terraces and lake plains. It is subject to rare flooding. Individual areas range from 5 to 675 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 10 inches thick. The subsoil to a depth of more than 60 inches is mottled, firm silty clay loam. The upper part is light brownish gray, and the lower part is gray and light gray. In some areas the surface layer has more clay. In other areas the soil has more sand throughout. In places the surface layer is darker.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and McGary soils. These soils are slightly higher on the landscape than the Sexton soil. Also, Henshaw soils have less clay in the subsoil. Included soils make up 5 to 15 percent of the unit.

Water and air move through the Sexton soil at a slow rate. Surface runoff is slow. A seasonal high water table is within a depth of 2 feet from March through June in most years. Available water capacity is high. Organic matter content is moderate. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is moderately suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The slow permeability and the seasonal wetness are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIw.

7434A—Ridgway silt loam, 0 to 2 percent slopes, rarely flooded. This nearly level, well drained soil is on broad rises on stream terraces. It is subject to rare flooding. Individual areas range from 4 to 20 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is brown, dark yellowish brown, and yellowish brown, friable and firm silty clay loam; yellowish brown, friable clay loam; strong brown, very friable sandy loam; and alternating bands of yellowish brown, loose loamy sand and brown, very friable sandy loam. In some areas the surface layer has more sand. In other areas the depth to a seasonal high water table is less than 6 feet. In some places the surface layer is darker. In other places the lower part of the subsoil has less sand and more silt.

Included with this soil in mapping are small areas of the poorly drained Patton and Sexton soils. These soils are in nearly level areas or shallow depressions below the Ridgway soil. They have a silty layer that is thicker than that of the Ridgway soil. Also, Patton soils have a dark surface layer. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Ridgway soil at a moderate rate and through the lower part at a rapid rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. Because of the flooding, it is only moderately suited to septic tank absorption fields and is generally unsuited to dwellings.

Few limitations affect the use of this soil for corn, soybeans, or small grain. A conservation tillage system that leaves crop residue on the surface after planting helps to prevent surface crusting and maintains tilth.

The land capability classification is I.

7434B—Ridgway silt loam, 2 to 5 percent slopes, rarely flooded. This gently sloping, well drained soil is on ridges on stream terraces. It is subject to rare flooding. Individual areas range from 3 to 15 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsurface layer also is brown, friable silt loam. It is about 3 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is yellowish brown, friable silt loam; dark yellowish brown, firm silty clay loam; yellowish brown, friable silt loam; and yellowish brown, friable sandy loam that has bands of dark yellowish brown, loose sand and very friable loamy sand. In some areas the upper part of the subsoil has more sand. In other areas the depth to a seasonal high water table is less than 6 feet.

Included with this soil in mapping are small areas of the poorly drained Ruark and Sexton soils. These soils are lower on the landscape than the Ridgway soil. Also, Ruark soils have more sand throughout. Included soils make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Ridgway soil at a moderate rate and through the lower part at a rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. Because of the flooding, it is only moderately suited to septic tank absorption fields and is generally unsuited to dwellings.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

The land capability classification is IIe.

7436—Meadowbank silt loam, rarely flooded. This nearly level, well drained soil is on broad rises on stream terraces. It is subject to rare flooding. Individual areas range from 5 to 15 acres in size.

Typically, the surface soil is very dark brown and very dark grayish brown, friable silt loam about 19 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is dark yellowish brown, friable and firm silty clay loam; brown, firm loam; strong brown, friable sandy loam; and alternating bands of light yellowish brown, loose sand and strong brown and yellowish brown, very friable loamy sand and sandy loam. In some areas the lower part of the subsoil has less sand. In other areas the depth to a seasonal high water table is less than 6 feet. In some places the surface layer is lighter colored. In other places the surface layer and the upper part of the subsoil have more sand.

Included with this soil in mapping are small areas of the somewhat excessively drained Dickinson and somewhat poorly drained Newhaven soils. Dickinson soils have less clay and more sand throughout than the Meadowbank soil. They are in landscape positions similar to those of the Meadowbank soil. Newhaven soils are slightly lower on the landscape than the Meadowbank soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Meadowbank soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops. Because of the flooding, it is only moderately suited to septic tank absorption fields and is generally unsuited to dwellings.

Few limitations affect the use of this soil for corn, soybeans, or small grain. A conservation tillage system that leaves crop residue on the surface after planting helps to prevent surface crusting and maintains tilth.

The land capability classification is I.

7445—Newhaven loam, rarely flooded. This nearly level, somewhat poorly drained soil is on slight rises on terraces. It is subject to rare flooding. Individual areas range from 3 to 30 acres in size.

Typically, the surface soil is very dark grayish brown, friable loam about 15 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. In sequence downward, it is brown, friable loam; brown and grayish brown, firm clay loam; brown, friable sandy loam; and alternating bands of yellowish brown, very friable loamy sand and dark brown, friable sandy loam. In some areas the surface soil and the upper part of the subsoil have less sand. In some places the surface soil is lighter colored. In other places the subsoil has more sand and less clay.

Included with this soil in mapping are small areas of the poorly drained Springerton soils. These soils are in drainageways and on flats below the Newhaven soil. They make up 3 to 10 percent of the unit.

Water and air move through the upper part of the Newhaven soil at a moderate rate and through the lower part at a moderately rapid or rapid rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from February through June in most years. Available water capacity is high. Organic matter content also is high. The shrink-swell potential is

moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table can delay planting in spring. Subsurface tile drains function satisfactorily if suitable outlets are available. Measures that maintain the drainage system are needed. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain productivity and tilth.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is I.

7446—Springerton loam, rarely flooded. This nearly level, poorly drained soil is on low flats and in drainageways on terraces and lake plains. It is subject to ponding for brief periods from March through June and to rare flooding. Individual areas range from 5 to 500 acres in size.

Typically, the surface soil is very dark gray and very dark grayish brown, friable loam about 19 inches thick. It is mottled in the lower part. The subsoil is about 26 inches thick. It is mottled and friable. The upper part is dark grayish brown loam and clay loam, and the lower part is light brownish gray loam. The underlying material to a depth of 60 inches is grayish brown, mottled, friable loam. In some areas the surface soil and subsoil have more clay and less sand. In other areas the surface soil is light colored and thinner.

Included with this soil in mapping are small areas of the somewhat poorly drained Newhaven soils. These soils are on slight rises above the Springerton soil. They make up 2 to 10 percent of the unit.

Water and air move through the Springerton soil at a moderate rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from March through June in most years. Available water capacity is high. Organic matter content also is high. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and to hay and pasture. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

The land capability classification is IIw.

7462A—Sciotoville silt loam, 0 to 2 percent slopes, rarely flooded. This nearly level, moderately well drained soil is on slight rises on flood plains. It is subject to rare flooding. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsurface layer is brown, mottled, friable silt loam about 14 inches thick. The subsoil is about 33 inches thick. It is mottled. The upper part is pale brown, friable silt loam; the next part is pale brown, firm silt loam that has many silt coatings; and the lower part is pale brown and brown, firm, brittle silty clay loam. The underlying material to a depth of 60 inches is pale brown, mottled, firm silt loam. In some areas the upper part of the subsoil is grayer. In other areas the surface layer has more sand. In some places the soil has more sand throughout. In other places the lower part of the subsoil is less brittle.

Included with soil in mapping are small areas of the somewhat poorly drained Belknap and poorly drained Ginat soils. Belknap soils are on the more recent flood plains adjacent to the rivers. Ginat soils are lower on the landscape than the Sciotoville soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Sciotoville soil at a moderate rate and through the lower part at a slow rate. Surface runoff is slow. A perched seasonal high water table is at a depth of 1.5 to 3.0 feet from November through March in most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the slow permeability are limitations. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIw.

7462B—Sciotoville silt loam, 2 to 5 percent slopes, rarely flooded. This gently sloping, moderately well drained soil is on rises on flood plains. It is subject to rare flooding. Individual areas range from 3 to 40 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsurface layer is yellowish brown, mottled, friable silt loam about 8 inches thick. The subsoil extends to a depth of 60 inches. It is mottled. In sequence downward, it is yellowish brown, friable silt loam; yellowish brown, firm silty clay loam that has many silt coatings; yellowish brown, firm, brittle silty clay loam; and strong brown, friable silt loam. In some areas the subsoil is less brittle. In some places the soil has more sand throughout. In other places slopes are as much as 9 percent.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap and poorly drained Ginat soils. Belknap soils are on the more recent flood plains adjacent to the rivers. Ginat soils are lower on the landscape than the Sciotoville soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Sciotoville soil at a moderate rate and through the lower part at a slow rate. Surface runoff is medium. A perched seasonal high water table is at a depth of 1.5 to 3.0 feet from November through March in most years. Available water capacity is moderate. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the slow permeability are limitations. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIe.

7465—Montgomery silty clay, rarely flooded. This nearly level, very poorly drained soil is on broad flats and in shallow depressions on lake plains. It is subject to ponding for brief periods from December through May and to rare flooding. Individual areas range from 20 to 80 acres in size.

Typically, the surface soil is very dark gray, firm silty clay about 14 inches thick. It is mottled in the lower part. The subsoil is about 43 inches thick. It is mottled. The upper part is very dark grayish brown and dark grayish brown, firm silty clay; the next part is olive gray, firm silty clay; and the lower part is grayish brown, friable, calcareous silty clay loam. The underlying material to a depth of 60 inches is light gray, mottled, friable, calcareous silty clay loam. In a few areas the surface layer is lighter colored. Some areas have recently received overwash of light colored silt loam.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils have a surface layer that is lighter colored than that of the Montgomery soil. They are on slight rises above the Montgomery soil. Included soils make up 3 to 8 percent of the unit.

Water and air move through the Montgomery soil at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is 1 foot above to 1 foot below the surface from December through May in most years. Available water capacity is high. Organic matter content also is high. The surface layer is firm and can be easily tilled only within a narrow range of moisture content. The shrink-swell potential and the potential for frost action are high.

Most areas are cultivated. This soil is moderately suited to cultivated crops and well suited to habitat for wetland wildlife. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

Some small ponded areas of this soil provide good habitat for wetland wildlife. Grain and seed crops, wild herbaceous plants, wetland plants, and other important habitat elements are available. Ducks, herons, frogs, turtles, and snakes are attracted to these areas.

The land capability classification is IIIw.

7467B—Markland silt loam, 2 to 5 percent slopes, eroded, rarely flooded. This gently sloping, well drained soil is on short side slopes on lake plains. It is

subject to rare flooding. Individual areas range from 3 to 20 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsoil is about 33 inches thick. The upper part is yellowish brown, firm silty clay loam; the next part is yellowish brown and light olive brown, firm silty clay; and the lower part is yellowish brown, mottled, friable silty clay loam. The underlying material to a depth of 60 inches is yellowish brown, mottled, friable, calcareous silty clay loam that has strata of silt loam. In some areas the subsoil has less clay. In other areas the underlying material has more sand. In places free carbonates are below a depth of 60 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils are slightly lower on the landscape than the Markland soil. They make up 5 to 8 percent of the unit.

Water and air move through the Markland soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 3 to 6 feet from December through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains because it contains subsoil material. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and to hay and pasture and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Establishing pasture and hay crops helps to keep soil loss within tolerable limits. Seedbed preparation is difficult in areas on side slopes where the subsoil is exposed. A no-till method of seeding or pasture renovation helps in establishing forage species and in controlling erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed. Sewage lagoons function satisfactorily if the site is leveled.

The land capability classification is IIIe.

7467C—Markland silt loam, 5 to 10 percent slopes, eroded, rarely flooded. This sloping, well drained soil is on short side slopes on lake plains. It is subject to rare flooding. Individual areas range from 3 to 25 acres in size.

Typically, the surface layer is dark yellowish brown, friable silt loam about 8 inches thick. The subsoil is yellowish brown, firm silty clay about 31 inches thick. It is mottled in the lower part. The underlying material to a depth of 60 inches is light yellowish brown, mottled, firm, calcareous silty clay. In some areas the soil has more sand throughout. In other areas the subsoil has less clay. In severely eroded areas the surface layer has more clay. In places the underlying material has more sand. In some areas along Skillet Fork south of Mills Shoals, the soil is frequently flooded.

Included with this soil in mapping are small areas of the somewhat poorly drained McGary soils. These soils are at the head of drainageways and in the less sloping areas above or below the Markland soil. They make up 3 to 8 percent of the unit.

Water and air move through the Markland soil at a slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 3 to 6 feet from December through April in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains because it contains subsoil material. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated or wooded. This soil is poorly suited to cultivated crops and to septic tank absorption fields and is moderately suited to hay and pasture. It is well suited to woodland and to woodland wildlife habitat. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard and poor tilth is a limitation. A crop rotation that is dominated by forage crops and a combination of contour farming and a conservation tillage system that leaves crop residue on the surface after planting help to keep soil loss within tolerable limits. Stripcropping also helps to control erosion. Returning crop residue to the soil and regularly adding other organic material improve tilth, help to prevent surface crusting, and increase the rate of water infiltration.

Establishing pasture or hay crops helps to keep

erosion within tolerable limits. Establishing a forage crop is difficult in severely eroded areas where the subsoil is exposed. Applying a no-till seeding method and seeding on the contour help to control erosion. The plants should not be grazed or clipped 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 prevent surface compaction and excessive runoff.

If this soil is used as woodland, seedling mortality and windthrow are management concerns. The seedling mortality rate can be reduced by planting species that can withstand the moderate available water capacity, which results from a high content of clay in the subsoil. Harvesting methods that do not isolate the remaining trees or leave them widely spaced reduce the hazard of windthrow. Only high-value trees should be removed from a strip 50 feet wide along the west and south edges of the woodland. 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.

This soil is suitable for grain and seed crops, for wild herbaceous plants, and for the hardwood trees that are needed in areas of woodland wildlife habitat. Food plots of grain or seed crops should be established only in the less steep areas. Also, the crops should be planted on the contour. Measures that protect the habitat from fire and grazing are needed.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IVe.

7482B—Uniontown silt loam, 2 to 5 percent slopes, eroded, rarely flooded. This gently sloping, moderately well drained soil is on knolls on lake plains and stream terraces. It is subject to rare flooding. Individual areas range from 3 to 35 acres in size.

Typically, the surface layer is brown, friable silt loam about 7 inches thick. The subsoil is about 34 inches thick. It is friable. The upper part is yellowish brown silty clay loam; the next part is light olive brown, mottled silt loam; and the lower part is light yellowish brown, mottled, calcareous silt. The underlying material to a depth of 60 inches is light yellowish brown, mottled, friable, calcareous silt. In some areas the lower part of the subsoil and the underlying material have more sand. In other areas, the subsoil is thicker and free carbonates are below a depth of 60 inches. In some places the subsoil is not mottled. In other places the soil has more sand throughout.

Included with this soil in mapping are small areas of the somewhat poorly drained Henshaw and poorly drained Patton soils. These soils are lower on the landscape than the Uniontown soil. Patton soils have a surface layer that is darker than that of the Uniontown soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Uniontown soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 2.5 to 6.0 feet from November through May in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland. It is moderately suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. 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 help to maintain tilth and fertility.

Adapted pasture and hay crops grow well on this soil. Overgrazing reduces forage yields, causes surface compaction and excessive runoff, and increases the susceptibility to erosion. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and control erosion.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations and the flooding is a hazard. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability.

The land capability classification is IIe.

7482C—Uniontown silt loam, 5 to 10 percent slopes, eroded, rarely flooded. This sloping, moderately well drained soil is on side slopes on lake plains. It is subject to rare flooding. Individual areas range from 3 to 30 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsoil is yellowish brown, firm silty clay loam about 32 inches thick. The

underlying material to a depth of 60 inches is yellowish brown, mottled, friable, calcareous silt loam. In severely eroded areas the surface layer has more clay. In some areas the lower part of the subsoil and the underlying material have more sand. In other areas the subsoil has more clay. In places the soil has a thicker subsoil and has free carbonates below a depth of 60 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained Wakeland soils. These soils are in drainageways below the Uniontown soil. They make up 3 to 7 percent of the unit.

Water and air move through the upper part of the Uniontown soil at a moderate rate and through the lower part at a moderately slow rate. Surface runoff is medium. A seasonal high water table is at a depth of 2.5 to 6.0 feet from November through May in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops, to hay and pasture, and to septic tank absorption fields. It is well suited to woodland and to woodland wildlife habitat. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

This soil can be used for the grain and seed crops and grasses and legumes that provide food and cover for openland wildlife. Examples of suitable grasses and legumes are bromegrass, orchardgrass, ladino clover, alsike clover, and red clover. The existing stands of trees provide good habitat for woodland wildlife. Measures that protect the habitat from fire and grazing help to prevent depletion of the shrubs and sprouts that provide food for the wildlife.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations and the flooding is a hazard. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability.

The land capability classification is IIIe.

7483—Henshaw silt loam, rarely flooded. This nearly level, somewhat poorly drained soil is on slight rises on lake plains. It is subject to rare flooding. Individual areas range from 3 to 90 acres in size.

Typically, the surface layer is brown, friable silt loam about 6 inches thick. The subsurface layer is brownish yellow, very friable silt loam about 5 inches thick. The subsoil is mottled silty clay loam about 33 inches thick. The upper part is yellowish brown and is friable and firm, and the lower part is grayish brown and friable. The underlying material to a depth of 60 inches is grayish brown, mottled, friable, calcareous silty clay loam. In some areas the subsoil has more clay. In other areas the lower part of the subsoil and the underlying material have more sand. In some places free carbonates are below a depth of 60 inches. In other places the underlying material has more silt and less clay.

Included with this soil in mapping are small areas of the well drained Ridgway, moderately well drained Uniontown, and poorly drained Patton soils. Ridgway and Uniontown soils are on ridges above the Henshaw soil. Patton soils are in drainageways and nearly level or slightly depressional areas below the Henshaw soil. They have a surface layer that is darker than that of the Henshaw soil. Included soils make up 10 to 15 percent of the unit.

Water and air move through the Henshaw soil at a moderately slow rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 2 feet from November through March in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some

years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations. Subsurface tile drains lower the water table. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderately slow permeability.

The land capability classification is IIw.

7484—Harco silt loam, rarely flooded. This nearly level, somewhat poorly drained soil is on slight rises on lake plains. It is subject to rare flooding. Individual areas range from 3 to 25 acres in size.

Typically, the surface layer is very dark gray, friable silt loam about 8 inches thick. The subsurface layer is black, mottled, firm silty clay loam about 11 inches thick. The subsoil is mottled silty clay loam about 24 inches thick. The upper part is light olive brown and firm, and the lower part is light brownish gray and friable. The underlying material to a depth of 60 inches is light brownish gray, mottled, friable, calcareous silt loam. In places the surface layer is lighter colored as a result of erosion. In some areas the subsoil has more clay. In places the lower part of the subsoil and the underlying material have more sand.

Included with this soil in mapping are small areas of the poorly drained Patton and very poorly drained Montgomery soils. These soils are on flats and in slight depressions below the Harco soil. They make up 5 to 10 percent of the unit.

Water and air move through the Harco soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from February through April in most years. Available water capacity is high. Organic matter content also is high. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table can delay planting in spring. Measures that maintain the drainage system are needed. Subsurface tile drains function satisfactorily if suitable outlets are available. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain productivity and tilth.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is I.

7524—Zipp silty clay, rarely flooded. This nearly level, very poorly drained soil is on broad flats on lake plains. It is subject to ponding for brief periods from December through May and to rare flooding. Individual areas range from 20 to 1,000 acres in size.

Typically, the surface layer is dark grayish brown, firm silty clay about 8 inches thick. The subsoil is light gray and gray, mottled, firm silty clay about 40 inches thick. The underlying material to a depth of 60 inches is light gray, mottled, firm silty clay. In some areas the surface layer is darker. In other areas the subsoil has less clay. In places the surface layer is covered by overwash of silt loam.

Included with this soil in mapping are small areas of the poorly drained Racoon and somewhat poorly drained Creal soils. These soils have less clay than the Zipp soil. Also, they are slightly higher on the landscape. They make up 5 to 10 percent of the unit.

Water and air move through the Zipp soil at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from December through May in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer is firm and cannot be easily tilled. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and well suited to wetland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

Corn, soybeans, and small grain can be grown in most areas of this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

Some small ponded areas of this soil provide good habitat for wetland wildlife. Grain and seed crops, wild herbaceous plants, wetland plants, and other important habitat elements are available. Ducks, herons, frogs, turtles, and snakes are attracted to these areas.

The land capability classification is IIIw.

7524+—Zipp silt loam, overwash, rarely flooded. This nearly level, very poorly drained soil is on broad flats on lake plains. It is subject to ponding for brief periods from December through May and to rare flooding. Individual areas range from 5 to 150 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The underlying material is grayish brown, mottled, friable silt loam about 8 inches thick. Below this to a depth of more than 60 inches is a buried soil that is mottled and firm. The upper part of the buried soil is grayish brown silty clay loam, and the lower part is dark grayish brown and grayish brown silty clay. In some areas the surface layer is thinner. In other areas the soil is deeper to silty clay. In places the buried soil has less clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Creal soils. These soils are slightly higher on the landscape than the Zipp soil. They make up 4 to 8 percent of the unit.

Water and air move through the Zipp soil at a slow rate. Surface runoff is slow to ponded. A seasonal high water table is 0.5 foot above to 2.0 feet below the surface from December through May in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential is high, and the potential for frost action is moderate.

Most areas are cultivated. This soil is moderately suited to cultivated crops and well suited to wetland wildlife habitat. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding and ponding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The land capability classification is IIIw.

7750A—Skelton fine sandy loam, 0 to 2 percent slopes, rarely flooded. This nearly level, well drained soil is on slight rises and broad flats on stream terraces and lake plains. It is subject to rare flooding. Individual areas range from 5 to 240 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is strong brown, friable clay loam; the next part is strong brown, friable sandy loam; and the lower part occurs as alternating bands of yellowish brown, loose loamy sand and dark yellowish brown, very friable sandy loam. In some areas the subsoil has less clay. In other areas the surface layer and the upper part of the subsoil have more silt and less sand. In places the subsoil has more clay.

Included with this soil in mapping are small areas of the poorly drained Sexton and Ruark and somewhat poorly drained Crawleyville soils. These soils are lower on the landscape than the Skelton soil. They make up 5 to 15 percent of the unit.

Water and air move through the upper part of the Skelton soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is slow. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are cultivated. This soil is well suited to cultivated crops and is moderately suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

Few limitations affect the use of this soil for corn, soybeans, or small grain. A conservation tillage system that leaves crop residue on the surface after planting helps to prevent surface crusting and maintains tilth.

If this soil is used as a site for septic tank absorption fields, the flooding is a hazard and the moderate permeability is a limitation. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderate permeability.

The land capability classification is I.

7750B—Skelton fine sandy loam, 2 to 5 percent slopes, rarely flooded. This gently sloping, well drained soil is on ridges on stream terraces and lake plains. It is subject to rare flooding. Individual areas range from 3 to 25 acres in size.

Typically, the surface layer is brown, very friable fine sandy loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is dark yellowish brown, very friable fine sandy loam; strong brown, firm clay loam; yellowish brown, friable loam and sandy loam; and alternating bands of yellowish brown, very friable loamy sand and dark yellowish brown, very friable sandy loam. In some areas the surface layer and the upper part of the subsoil have more silt and less sand. In other areas the subsoil has less clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Crawleyville and poorly drained Ruark soils. These soils are lower on the

landscape than the Skelton soil. They make up 2 to 10 percent of the unit.

Water and air move through the upper part of the Skelton soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are cultivated. This soil is well suited to cultivated crops, to hay and pasture, and to woodland and is moderately suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

Measures that control erosion are needed in areas used for corn, soybeans, or small grain. Examples are a system of conservation tillage that leaves crop residue on the surface after planting, terraces, and contour farming. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as a site for septic tank absorption fields, the flooding is a hazard and the moderate permeability is a limitation. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderate permeability.

The land capability classification is IIe.

7750C—Skelton fine sandy loam, 5 to 10 percent slopes, eroded, rarely flooded. This sloping, well drained soil is on terrace breaks and on side slopes on stream terraces and lake plains. It is subject to rare flooding. Individual areas range from 4 to 35 acres in size.

Typically, the surface layer is brown, friable fine sandy loam about 6 inches thick. The subsoil extends to a depth of more than 60 inches. In sequence downward, it is yellowish brown, firm clay loam; yellowish brown, friable loam; yellowish brown, very friable sandy loam; and alternating bands of yellowish brown, very friable loamy sand and dark yellowish brown, very friable sandy loam. In some areas the surface layer and the upper part of the subsoil have more silt and less sand. In other areas the subsoil has less clay.

Included with this soil in mapping are small areas of the poorly drained Sexton and Ruark and somewhat poorly drained Crawleyville soils. These soils are lower on the landscape than the Skelton soil. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Skelton soil at a moderate rate and through the lower part at a moderately rapid rate. Surface runoff is medium. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are cultivated. This soil is well suited to hay, pasture, and woodland. It is moderately suited to cultivated crops and to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, further erosion is a hazard. 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, contour farming, or a combination of these can help to keep soil loss within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to maintain productivity and tilth.

Adapted forage and hay crops grow well on this soil. Timely deferment of grazing helps to prevent surface compaction and excessive runoff and erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. Applications of fertilizer are needed. The plants should not be grazed or clipped until they are sufficiently established.

If this soil is used as a site for septic tank absorption fields, the flooding is a hazard and the moderate permeability is a limitation. Increasing the size of the filter field or replacing the soil with material that is more permeable helps to overcome the moderate permeability. The slope is a limitation in the more sloping areas. Installing the filter lines on the contour or cutting and land shaping help to overcome this limitation.

The land capability classification is IIIe.

7751—Crawleyville fine sandy loam, 0 to 2 percent slopes, rarely flooded. This nearly level, somewhat poorly drained soil is on broad rises on terraces. It is subject to rare flooding. Individual areas range from 3 to 80 acres in size.

Typically, the surface layer is brown, very friable fine sandy loam about 10 inches thick. The subsurface layer is brown, mottled, very friable fine sandy loam about 5 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. The upper part is brown, friable loam; the next part is grayish brown, firm clay loam; and the lower part is grayish brown, firm loam. In some areas the subsoil has more clay. In other areas the upper part of the soil has more silt and less sand. In places the subsoil has less clay.

Included with this soil in mapping are small areas of the well drained Skelton and poorly drained Ruark soils. Skelton soils are on the crest of ridges above the Crawleyville soil. Ruark soils are in drainageways and slightly depressional areas below the Crawleyville soil. Included soils make up 2 to 10 percent of the unit.

Water and air move through the Crawleyville soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 1 to 3 feet from January through April in most years. Available water capacity is high. Organic matter content is moderately low. In cultivated areas the surface tends to crust and puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table delays planting in some years. It can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

If this soil is used as a site for septic tank absorption fields, the seasonal wetness is a limitation. Subsurface tile drains lower the water table. Grading and land shaping help to remove excess surface water.

The land capability classification is IIw.

7787—Banlic silt loam, rarely flooded. This nearly level, somewhat poorly drained soil is on slight rises on flood plains. It is subject to rare flooding. Individual areas range from 4 to 60 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 9 inches thick. The subsurface layer is brown, mottled, friable silt loam about 15 inches thick. The subsoil to a depth of 60 inches is light brownish gray, mottled silt loam. The upper part is friable, and the lower part is firm and brittle. In some places the subsoil has more clay. In other places it is not brittle in the lower part.

Included with this soil in mapping are small areas of the poorly drained Bonnie soils. These soils do not have a brittle layer. They are in drainageways and depressions below the Banlic soil. They make up 1 to 5 percent of the unit.

Water and air move through the Banlic soil at a slow rate. Surface runoff is slow. A perched seasonal high water table is at a depth of 1 to 3 feet from January through June in most years. Available water capacity is moderate. Organic matter content is low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are cultivated. This soil is well suited to cultivated crops and is poorly suited to septic tank absorption fields. It is generally unsuited to dwellings because of the flooding.

If this soil is used for corn, soybeans, or small grain, the seasonal high water table or the flooding delays planting in most years. The seasonal high water table can be lowered by surface ditches or subsurface drains. Tilling when the soil is wet causes surface cloddiness and excessive runoff and erosion. Returning crop residue to the soil and minimizing tillage help to maintain good tilth and increase the rate of water infiltration.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table and the slow permeability are limitations. A septic tank system can function satisfactorily only if a sealed sand filter and a disinfection tank or an evapotranspiration bed are installed.

The land capability classification is IIw.

7812E—Typic Hapludalfs, 10 to 30 percent slopes, rarely flooded. These strongly sloping to steep, well drained soils are on escarpments and short side slopes on terraces and lake plains. They are subject to rare flooding. Individual areas range from 3 to 15 acres in size.

Typically, this map unit consists of one or more soils that occur as areas so small and closely intermingled that mapping them separately is not practical. The soils that make up the unit vary, depending on the area of the county. In a representative profile, the surface layer is very dark grayish brown, friable silt loam about 3 inches thick. The subsoil is about 22 inches thick. It is firm. The upper part is brown silty clay loam, and the lower part is dark yellowish brown silty clay. The underlying material to a depth of 60 inches is yellowish brown, mottled, firm, calcareous silty clay. In some areas the soils have more sand throughout.

Included with these soils in mapping are small areas of somewhat poorly drained soils on the lower slopes that are subject to seepage. Also included are small areas of silty alluvial soils on flood plains. Included soils make up 10 to 15 percent of the unit.

Water and air move through the Typic Hapludalfs at a slow to moderately rapid rate. Surface runoff is rapid. Available water capacity is moderate or high. Organic matter content is moderately low. The shrink-swell potential generally is moderate, and the potential for frost action generally is high or moderate.

Most areas are wooded. These soils are generally unsuited to cultivated crops, dwellings, and septic tank absorption fields because of the hazard of erosion, the slope, and the flooding. They are poorly suited to hay and pasture and moderately suited to woodland.

If these soils are used as woodland, the hazard of erosion and an equipment limitation are management concerns. Logging roads and skid trails should be

established on the contour if possible. On the steeper slopes the logs or trees should be skidded uphill with a cable and winch. Firebreaks should be the grass type. Bare logging areas should be seeded to grasses or to a grass-legume mixture. Machinery should be used only when the soils are firm enough to support the equipment. Plant competition is an additional management concern. It retards the growth of desirable seedlings. 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 soils, and damage to tree roots.

The land capability classification is VIe.

8072—Sharon silt loam, occasionally flooded. This nearly level, moderately well drained soil is on flood plains. It is occasionally flooded for brief periods from March through June. Individual areas range from 5 to 80 acres in size.

Typically, the surface layer is brown, friable silt loam about 2 inches thick. The underlying material to a depth of 60 inches is friable silt loam. The upper part is yellowish brown, the next part is brown and mottled, and the lower part is light brownish gray and mottled. In some areas the soil is gently sloping. In other areas the lower part of the underlying material has rock fragments. In some places sandstone or shale bedrock is within a depth of 60 inches. In other places the underlying material has moderately thick or thick strata of loam or sandy loam.

Included with this soil in mapping are small areas of the somewhat poorly drained Belknap soils. These soils are on the lower parts of the flood plains and in areas where small drainageways join the larger flood plains. They make up 2 to 10 percent of the unit.

Water and air move through the Sharon soil at a moderate rate. Surface runoff is slow. A seasonal high water table is at a depth of 3 to 6 feet from March through June in most years. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential is low, and the potential for frost action is high.

Most areas are wooded. Some small areas are cultivated. This soil is well suited to cultivated crops and to woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

If this soil is used for corn, soybeans, or small grain, the flooding is a hazard. Dikes or diversions can reduce the extent of the crop damage caused by floodwater. Selecting the crop varieties that are adapted to the shorter growing seasons and wetter conditions also reduces the extent of this damage. Keeping tillage to a minimum and returning crop residue to the soil help to maintain tilth and productivity.

If this soil is used as woodland, plant competition is a management concern. It retards the growth of desirable seedlings. 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.

The land capability classification is IIw.

8460—Ginat silt loam, occasionally flooded. This nearly level, poorly drained soil is on broad, low flats on flood plains. It is occasionally flooded for brief periods from December through March. Individual areas range from 10 to 200 acres in size.

Typically, the surface layer is dark grayish brown, friable silt loam about 6 inches thick. The subsurface layer is dark grayish brown and light brownish gray, mottled, friable silt loam about 10 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled. The upper part is light brownish gray, firm silt loam, and the lower part is grayish brown, firm, brittle silty clay loam. In some areas the soil has more sand throughout. In other areas the subsoil has less clay.

Included with this soil in mapping are small areas of the moderately well drained Sciotoville soils. These soils are slightly higher on the landscape than the Ginat soil. They make up 5 to 10 percent of the unit.

Water and air move through the upper part of the Ginat soil at a moderate rate and through the lower part at a very slow rate. Surface runoff is slow. A perched seasonal high water table is within a depth of 1 foot from January through May in most years. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust or puddle after hard rains. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are cultivated. This soil is moderately suited to cultivated crops. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

Corn, soybeans, and small grain can be grown on this soil because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. A combination of surface ditches and land leveling reduces the wetness. Tilling when the soil is wet causes surface compaction and decreases 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 help to maintain good tilth.

The land capability classification is IIIw.

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.

A recent trend in land use in some parts of the county has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 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 at the back of this publication. 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. Most of the naturally wet soils in White County have been 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 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 White County maximum production of row crops has nearly been achieved on many of the upland soils that are suitable for row cropping. The potential for increased yields is good, however, on the sandy soils on terraces and lake plains if irrigation water is applied. The more sloping soils on uplands have good potential for hay and pasture. This soil survey can be used as a guide to the latest management techniques that can increase food production. It provides the resource data needed for wise land use planning. Land use planners and decision makers can use the information in the survey as a guide in making land use decisions that ensure the orderly growth and development of towns and rural areas.

Water erosion is a major hazard on the cropland and pasture in the county if slopes are more than 2 percent. It is also a hazard in areas where slopes are less than 2 percent but are long. According to the White County Soil and Water Conservation District, better erosion control is needed on about 53 percent of the cropland.

Erosion is damaging for several reasons. The organic matter content and the natural fertility level are lowered as the surface layer is eroded away and the subsoil is mixed into the plow layer. As a result, soil productivity is reduced. Loss of the surface layer is especially damaging on soils having layers that limit root penetration, such as the brittle layers in the lower part of the subsoil in Ava, Hosmer, Grantsburg, and Zanesville soils; the bedrock in Berks and Wellston soils; and the clayey subsoil in Bluford, Markland, and McGary soils.

Erosion can result in the deterioration of tilth in the surface soil and can reduce the rate of water infiltration.

An eroded surface soil tends to become cloddy when tilled because it has a higher content of clay and a lower content of organic matter than an uneroded surface soil. On eroded soils, preparing a good seedbed is difficult and seed germination is poor. These soils tend to puddle after hard rains and crust when they dry. As a result, the runoff rate is increased.

Erosion can result in water pollution if the eroding sediment is allowed to enter drainage ditches, streams, rivers, ponds, and road ditches. Removing this sediment is expensive. Management that controls erosion also reduces the extent of sedimentation and improves the quality of water for municipal use, recreation, and fish and wildlife.

Erosion can be controlled by providing a surface cover, reducing the runoff rate, and increasing the rate of water infiltration. A cropping system that keeps a vegetative cover on the soil for extended periods can hold soil losses to amounts that will maintain the productivity of the soils. In sloping areas on livestock farms, where hay and pasture are needed, including forage crops of grasses and legumes in the cropping system reduces the hazard of erosion and provides nitrogen and improves tilth for the following crop. On farms where grain is grown, a combination of contour farming and terraces reduces the length of slopes and, along with an adequate cover of crop residue, reduces the hazard of erosion and increases the rate of water infiltration. Terraces are not suitable, however, in some areas of Alford, Ava, Hosmer, and Hickory soils because of short, steep slopes and an irregular topography. Terraces are more effective in areas of Alford, Ava, Bluford, Hosmer, Hoyleton, and Stoy soils where slopes are smooth and uniform.

Several conservation tillage systems can reduce the hazard of erosion in areas where grain is grown. Examples are chisel tillage, no-tillage, and ridge tillage. In areas where a system of conservation tillage is applied, crop residue protects the surface from the impact of raindrops and increases the rate of water infiltration.

Where a chisel tillage system is used, a rough surface is partly covered with crop residue. The amount of crop residue left on the surface depends on the type of chisel plow used, the speed with which the equipment moves through the field, and the kind of crop planted. Chisel tillage may follow stalk chopping in fall or can be used immediately before planting in spring.

Where a no-tillage system is applied, the crop is planted directly in a cover crop, in sod, or in the residue of the previous crop. A special planter that disturbs only the row area is used. Herbicides are used to control competing vegetation. The nearly complete ground cover protects the soil from the beating action of raindrops and from the action of flowing water on the surface.

The ridge tillage system is being used on an increasing acreage throughout Illinois, mainly on poorly drained and somewhat poorly drained soils. In areas where slopes are more than 2 percent, the ridges should be formed on the contour. Where this system is applied, a special field cultivator is used to make permanent ridges 6 to 10 inches high. The crops are planted directly into the raised ridges by a special planter. The ridge and valley microrelief improves germination in the wetter soils by raising the seedbed above the seasonal high water table, thus allowing the soils to warm up earlier in spring. Leaving crop residue in the valleys protects the soils from the beating action of raindrops and from soil blowing, increases the rate of water infiltration, and improves tilth.

Erosion-control measures are effective alone or in combination on most of the farmland in the county. The combination used and its effectiveness depend on the characteristics of the soil and the topography. Information about the design of erosion-control practices for each type of soil can be obtained from the White County Soil and Water Conservation District and the Natural Resources Conservation Service.

Soil blowing is a hazard on the coarser textured soils in the county, such as Alvin, Roby, Landes, and Sarpy soils. It can displace much of the surface layer if the wind is strong and the soil is dry and is not protected by vegetation or surface mulch. Soils that are plowed in the fall are especially susceptible to soil blowing during the following winter and spring. A plant cover, surface mulch, or a rough surface minimizes soil blowing.

Many areas of the poorly drained and very poorly drained soils in the county, such as Bonnie, Evansville, Montgomery, Patton, Ruark, Sexton, Springerton, and Zipp soils, have been drained satisfactorily for agricultural production. Some areas of Petrolia, Zipp, and other soils in depressions, however, cannot be drained economically because drainage ditches would have to be deep and would have to extend great distances to a suitable outlet. Crops on somewhat poorly drained soils, such as Belknap, Bluford, Henshaw, McGary, and Stoy soils, benefit from a drainage system during most years.

The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface drains and drainage tile is needed in most areas where poorly drained and very poorly drained soils are intensively row cropped. Drains should be more closely spaced in slowly permeable or very slow permeable soils than in the more rapidly permeable soils. Tile drains do not function satisfactorily in fine textured soils, such as Montgomery, Sexton, Wynoose,

and Zipp soils. Open ditches and surface drains are needed in areas of these soils.

The ridge tillage method of planting row crops is becoming increasingly popular on both clayey and silty soils on bottom land and nearly level lake plains. Ridging helps to remove water from the seedbed, improves plant emergence, and helps the plants to survive shallow flooding or ponding. Ridging poorly drained and very poorly drained soils promotes early warming and drying of the seedbed. Land leveling and a good surface drainage system that provides outlets for individual valleys help to make ridging more effective.

Flooding is a hazard on the bottom land and most of the lake plains and terraces in the county. Armiesburg, Newark, Nolin, Petrolia, and Stonelick soils and some areas of Bonnie, Patton, Ruark, and Zipp soils are flooded during the winter and early spring of most years. The flooding usually does not occur during the growing season and seldom causes significant crop losses. Floodwater on frequently flooded soils on bottom land, such as Ambraw, Nolin, and Petrolia soils, often delays planting and in some years prevents planting. Because of the flooding, winter wheat and pasture and hay crops generally are not grown on these soils. The soils along the smaller streams, such as Belknap soils and some areas of Bonnie, Sharon, and Wakeland soils, are subject to local flooding, which is usually of short duration and does not severely restrict crop selection or tillage.

Droughtiness is a limitation on the coarser textured soils in the county, such as Bloomfield, Landes, and Sarpy soils. These soils have a low available water capacity. During periods of low rainfall, the crops growing on these soils are subject to moisture stress. Additions of organic matter and minimum tillage conserve moisture and help to prevent crop loss.

Soil tilth has important effects on the germination of seeds, the amount of water that runs off the surface, and the rate of water infiltration. Soils with good tilth are granular and porous. Cropped soils in the uplands commonly have a surface layer of silt loam that is light in color, is low or moderate in organic matter content, and has weak structure. Usually, the exposed surface puddles during periods of intensive rainfall and crusts as the soil dries. Once the crust forms, the rate of water infiltration decreases and the rate of runoff increases. Including grasses and legumes in the cropping sequence, regularly returning crop residue to the soil, and adding manure or other organic material improve tilth and help to prevent crusting.

Fall plowing is generally not a good practice on the light colored soils in the uplands because a crust forms during the winter and spring. Many soils are nearly as dense and hard at planting time as they were before they were plowed in the fall. Also, most of the cropland in the county consists of sloping soils that are subject to damaging erosion if they are plowed in the fall.

Tilth is a problem in the more clayey soils, such as Montgomery, Patton, and Zipp soils. These soils often stay wet until late in spring. If plowed when too wet, they tend to be very cloddy when dry. Because of the cloddiness, preparing a good seedbed is difficult. Chisel plowing in the fall or ridge tilling generally results in good tilth in the spring. Leaving crop residue on the surface minimizes surface crusting and helps to control soil blowing.

Soil fertility is naturally low or medium in most of the soils on uplands in the county. Most of these soils are naturally acid. Reaction varies more in the soils on lake plains, terraces, and flood plains than in the soils on uplands. Belknap, Bonnie, and Piopolis soils commonly are extremely acid to strongly acid, whereas Armiesburg, Petrolia, Nolin, Newark, and Stonelick soils commonly are medium acid to mildly alkaline.

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 *(4)*. 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 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 *(6)*. 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. 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, rangeland, 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 table 6.

Woodland Management and Productivity

Trees have been cleared from most the soils suitable for cultivated crops in White County. As a result, much of the remaining woodland is in areas where the soils are unsuitable for cultivation. In many areas the soils are too wet, too steep, or too isolated for cultivation. The soils in the wooded areas have good or fair potential for trees of high quality if the best suited species are selected for planting and the woodland is well managed. The dominant trees in the wooded areas are white oak, red oak, hickory, common hackberry, white ash, yellow-poplar, and black cherry on uplands and silver maple, slippery elm, eastern cottonwood, American sycamore, pin oak, and sweetgum on bottom land.

Much of the commercial woodland in the county can be improved by harvesting mature trees and by removing cull trees and other undesirable trees that retard the growth of desirable species. Timber management plans can be established with the help of a district forester. Measures that protect the woodland from fire and from grazing by livestock are needed. Control of competing vegetation is needed if seedlings are planted. Planting is needed when current stocking is inadequate, a change of species is indicated, or natural seed sources are deficient. A cover of grasses between the rows of seedlings planted in the more sloping bare areas helps to control erosion. If erosion is excessive or if slopes are more than 15 percent, runoff should be diverted away from haul roads and skid trails. Machinery can be used only if the soil is firm enough to support the weight of the equipment. A surface drainage system is needed on wet soils. Harvesting may be limited to the summer months on these soils.

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; and *F*, a high content of rock fragments in the soil. 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, and F.

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

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

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, pheasant, meadowlark, field sparrow, cottontail, 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 wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, 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 kind 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 a very firm dense layer; 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 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 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 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 and bedrock or a cemented pan 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.

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 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, bedrock, and cemented pans 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 groundwater 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 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 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 and for embankments, dikes, and levees. 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.

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 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 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 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 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 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 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 *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to 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 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 rock 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

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

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 about flooding 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.

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 *(7)*. 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 18 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 Entisol.

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 Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of 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 Fluvaquents (*Fluv*, meaning flood plain, plus *aquent*, the suborder of the Entisols 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 Fluvaquents.

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-silty, mixed, acid, mesic Typic Fluvaquents.

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. The soils of the Bonnie series are examples of fine-silty, mixed, acid, mesic Typic Fluvaquents.

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. 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" *(8)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(7)*. 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."

Alford Series

The Alford series consists of well drained, moderately permeable soils on uplands. These soils formed entirely

in loess. Slopes range from 2 to 18 percent.

Typical pedon of Alford silt loam, 2 to 5 percent slopes, 2,320 feet west and 1,340 feet north of the southeast corner of sec. 35, T. 6 S., R. 9 E.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; many very fine roots; neutral; abrupt smooth boundary.

BE—9 to 15 inches; strong brown (7.5YR 5/6) silt loam; moderate fine subangular blocky structure; friable; few very fine roots; common distinct brown (10YR 4/3) organic coatings on faces of peds; medium acid; clear smooth boundary.

Bt1—15 to 21 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; many distinct strong brown (7.5YR 5/6) clay films on faces of peds; few fine irregular accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

Bt2—21 to 30 inches; strong brown (7.5YR 5/6) silty clay loam; few fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few very fine roots; common distinct brown (7.5YR 5/4) clay films on faces of peds; very few distinct light gray (10YR 7/2 dry) silt coatings on faces of peds; few fine irregular accumulations of iron and manganese oxide; medium acid; gradual smooth boundary.

Bt3—30 to 45 inches; strong brown (7.5YR 5/6) silty clay loam; few fine distinct strong brown (7.5YR 5/8) mottles; moderate coarse subangular blocky structure; friable; few very fine roots; common distinct brown (7.5YR 5/4) clay films on faces of peds; very few distinct light gray (10YR 7/2 dry) silt coatings on faces of peds; few fine irregular accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

BC—45 to 58 inches; strong brown (7.5YR 5/6) silt loam; few medium distinct strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; friable; few very fine roots; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; few distinct brownish yellow (10YR 6/6 dry) silt coatings on faces of peds; few fine irregular accumulations of iron and manganese oxide; medium acid; gradual smooth boundary.

C—58 to 60 inches; strong brown (7.5YR 5/6) silt loam; few fine distinct strong brown (7.5YR 5/8) mottles; massive; friable; few distinct light gray (10YR 7/2 dry) silt coatings on faces of cleavage planes; few fine irregular accumulations of iron and manganese oxide; medium acid.

The solum generally is 45 to 60 inches thick but is as thin as 22 inches in some severely eroded areas. The depth to free carbonates is more than 60 inches.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It generally is silt loam but is silty clay loam in some severely eroded areas. The E horizon, if it occurs, has chroma of 3 or 4. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. It generally is silty clay loam but in some pedons is silt loam in the lower part. The content of clay in the control section ranges from 27 to 35 percent.

Alvin Series

The Alvin series consists of well drained soils on terraces and uplands. These soils formed in loamy and sandy outwash that has been reworked by the wind. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Slopes range from 0 to 30 percent.

Typical pedon of Alvin fine sandy loam, 0 to 2 percent slopes, rarely flooded, 1,440 feet north and 120 feet east of the center of sec. 4, T. 7 S., R. 10 E.

Ap—0 to 9 inches; brown (10YR 4/3) fine sandy loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; few very fine roots; neutral; abrupt smooth boundary.

BE—9 to 15 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate very fine subangular blocky structure; friable; few very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in root channels; slightly acid; clear smooth boundary.

Bt1—15 to 26 inches; brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; few very fine roots; common distinct dark brown (7.5YR 3/4) clay films on faces of peds; medium acid; gradual smooth boundary.

Bt2—26 to 38 inches; strong brown (7.5YR 4/6) sandy loam; moderate medium subangular blocky structure; friable; few very fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; few pebbles; medium acid; clear smooth boundary.

E&Bt—38 to 60 inches; strong brown (7.5YR 5/6) sand (E) that has lamellae of strong brown (7.5YR 4/6) loamy sand (Bt); single grain and loose (E) and weak medium subangular blocky structure and very friable (Bt); few very fine roots; few pebbles; medium acid.

The thickness of the solum ranges from 55 to 70 inches. The Ap horizon has hue of 10YR or 7.5YR and

value and chroma of 3 or 4. The BE and Bt horizons have value of 4 or 5. The content of clay in the control section ranges from 15 to 18 percent, and the content of sand ranges from 45 to 70 percent. The C horizon, if it occurs, is loamy sand or sand.

Ambraw Series

The Ambraw series consists of poorly drained, moderately slowly permeable soils on flood plains. These soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Ambraw loam, frequently flooded, 700 feet south and 275 feet east of the northwest corner of sec. 30, T. 5 S., R. 14 W.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; firm; few fine roots; few fine irregular accumulations of iron and manganese oxide; neutral; abrupt smooth boundary.

Bg1—11 to 19 inches; dark gray (10YR 4/1) clay loam; common medium prominent yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm; few very fine roots; few faint dark gray (10YR 4/1) slickensides on faces of peds; few fine and medium irregular accumulations of iron and manganese oxide; neutral; clear smooth boundary.

Bg2—19 to 23 inches; dark gray (10YR 4/1) clay loam; few medium prominent dark yellowish brown (10YR 4/6) mottles; moderate fine and medium subangular blocky structure; firm; few very fine roots; few faint dark gray (10YR 4/1) slickensides on faces of peds; few fine irregular accumulations of iron and manganese oxide; about 1 percent gravel; neutral; clear smooth boundary.

Bg3—23 to 40 inches; dark gray (N 4/0) clay loam; many medium prominent dark yellowish brown (10YR 4/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; few faint dark gray (N 4/0) slickensides on faces of peds; few medium irregular accumulations of iron and manganese oxide; about 2 percent gravel; neutral; clear smooth boundary.

Bg4—40 to 49 inches; dark gray (N 4/0) clay loam; common medium prominent strong brown (7.5YR 4/6) mottles; weak medium and coarse subangular blocky structure; firm; few faint dark gray (N 4/0) slickensides on faces of peds; few fine irregular accumulations of iron and manganese oxide; about 2 percent gravel; neutral; clear smooth boundary.

Cg—49 to 60 inches; dark gray (10YR 4/1) sandy loam; few medium prominent strong brown (7.5YR 4/6) mottles; massive; friable; about 3 percent gravel; neutral.

The thickness of the solum ranges from 49 to 53 inches. The thickness of the mollic epipedon ranges from 11 to 18 inches.

The Ap horizon has chroma of 1 or 2. The Bg horizon is clay loam or loam. The content of clay in the control section ranges from 27 to 35 percent. The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 1 or 2. It generally is sandy loam, but some pedons have strata of loamy sand to silt.

Armiesburg Series

The Armiesburg series consists of well drained, moderately permeable soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Armiesburg silty clay loam, frequently flooded, 240 feet east and 1,180 feet south of the northwest corner of sec. 29, T. 5 S., R. 14 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

A—8 to 21 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; friable; common very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine irregular concretions of iron and manganese oxide; neutral; clear smooth boundary.

Bw—21 to 32 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

Bt1—32 to 50 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; neutral; gradual smooth boundary.

Bt2—50 to 60 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure; friable; few distinct brown (10YR 4/3) clay films on vertical faces of peds; few fine

accumulations of iron and manganese oxide; neutral.

The thickness of the mollic epipedon ranges from 11 to 21 inches. The Bw and Bt horizons have value of 4 or 5. The content of clay in the 10- to 40-inch control section ranges from 27 to 35 percent.

Ava Series

The Ava series consists of moderately well drained soils on uplands. These soils formed in loess and in the underlying silty or loamy material or glacial till. Permeability is moderate in the upper part of the profile and very slow in the lower part. Slopes range from 2 to 18 percent.

Typical pedon of Ava silt loam, 2 to 5 percent slopes, 1,440 feet west and 30 feet north of the southeast corner of sec. 6, T. 7 S., R. 8 E.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; moderate very fine granular structure; friable; slightly acid; abrupt smooth boundary.

E—8 to 11 inches; yellowish brown (10YR 5/6) silt loam; moderate thin platy structure; friable; few distinct brown (10YR 4/3) organic coatings on faces of peds in the upper part of the horizon; medium acid; abrupt smooth boundary.

Bt—11 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine subangular and angular blocky structure; firm; few faint yellowish brown (10YR 5/6) clay films and very pale brown (10YR 7/3 dry) silt coatings on faces of peds; strongly acid; clear smooth boundary.

B/E—20 to 24 inches; yellowish brown (10YR 5/6) silty clay loam (B) and white (10YR 8/1) silt (E); common medium prominent strong brown (7.5YR 5/8) mottles; weak medium prismatic structure parting to moderate medium blocky; firm; few distinct yellowish brown (10YR 5/4) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; very strongly acid; abrupt smooth boundary.

B't—24 to 36 inches; yellowish brown (10YR 5/6) and pale brown (10YR 6/3) silty clay loam; few fine distinct grayish brown (10YR 5/2) and common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium prismatic structure parting moderate medium subangular blocky; firm; many distinct yellowish brown (10YR 5/4) clay films on faces of peds; few prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

2Btx—36 to 49 inches; yellowish brown (10YR 5/6) silty clay loam; common fine distinct grayish brown (10YR 5/2) and common medium prominent strong brown (7.5YR 5/8) mottles; strong coarse prismatic structure; firm and brittle; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

2BC—49 to 60 inches; light yellowish brown (10YR 6/4) silty clay loam; few medium distinct brownish yellow (10YR 6/8) mottles; moderate coarse subangular blocky structure; firm; few distinct yellowish brown (10YR 5/4) clay films on faces of peds; few prominent light gray (10YR 7/2 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; strongly acid.

The thickness of the solum ranges from 31 to more than 60 inches. Depth to the Btx or Bx horizon generally ranges from 15 to 40 inches but is 0 to 5 inches in some severely eroded areas.

The Ap horizon has value of 4 or 5 and chroma of 2 to 4. It is dominantly silt loam but is silty clay loam in some severely eroded areas. The E horizon has chroma of 4 to 6. The Bt horizon is silty clay loam or silt loam. It has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 8. The Btx, Bx, or 2Btx horizon contains more sand and pebbles than the Bt horizon and is silty clay loam or silt loam.

Banlic Series

The Banlic series consists of somewhat poorly drained, slowly permeable soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Banlic silt loam, rarely flooded, 2,060 feet west and 2,280 feet north of the southeast corner of sec. 6, T. 5 S., R. 8 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable; few very fine roots; few fine rounded accumulations of iron and manganese oxide; neutral; abrupt smooth boundary.

E1—9 to 20 inches; brown (10YR 5/3) silt loam; many fine distinct yellowish brown (10YR 5/6) and common fine faint grayish brown (10YR 5/2) mottles; moderate medium platy structure; friable; few very fine roots; few medium rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

E2—20 to 24 inches; brown (10YR 5/3) silt loam; many

medium faint light brownish gray (10YR 6/2) and few fine and medium faint yellowish brown (10YR 5/4) mottles; moderate thin platy structure; friable; few medium rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

Bg—24 to 33 inches; light brownish gray (10YR 6/2) silt loam; few fine distinct light yellowish brown (10YR 6/4) mottles; moderate thin platy structure; friable; many prominent white (10YR 8/1 dry) silt coatings on faces of peds; few medium rounded accumulations of iron and manganese oxide; very strongly acid; abrupt smooth boundary.

Bx—33 to 60 inches; light brownish gray (10YR 6/2) silt loam; many fine distinct yellowish brown (10YR 5/4) and few fine distinct dark yellowish brown (10YR 4/4) mottles; strong coarse prismatic structure; firm and brittle; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; strongly acid.

The thickness of the solum ranges from 50 to 65 inches. Depth to the Bx horizon is 25 to 36 inches. The content of clay in the 10- to 40-inch control section ranges from 12 to 18 percent.

The A horizon has value of 4 or 5 and chroma of 2 or 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. The Bg or Bw horizon has value of 5 or 6 and chroma of 2 or 3 and is mottled. The Bx horizon has value of 5 or 6 and chroma of 1 or 2. It is silt loam or silt. The Cg or C horizon, if it occurs, has colors similar to those of the Bg or Bw horizon.

Belknap Series

The Belknap series consists of somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in acid, silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Belknap silt loam, frequently flooded, 440 feet west and 300 feet south of the northeast corner of sec. 34, T. 6 S., R. 8 E.

Ap—0 to 7 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak fine and medium granular structure; friable; many very fine roots; very strongly acid; clear smooth boundary.

C—7 to 13 inches; yellowish brown (10YR 5/4) silt loam; many fine faint pale brown (10YR 6/3) and common fine faint dark yellowish brown (10YR 4/4) mottles; massive; friable; many very fine roots; common medium irregular accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

Cg1—13 to 32 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct dark yellowish brown (10YR 4/4) and few medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; common very fine roots; few medium prominent light gray (10YR 7/1 dry) pockets of silt; many medium and coarse rounded concretions of iron and manganese oxide; very strongly acid; clear wavy boundary.

Cg2—32 to 50 inches; light gray (10YR 6/1) silt loam; few fine distinct dark yellowish brown (10YR 4/4) and common fine and medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; common medium distinct light gray (10YR 7/1 dry) pockets of silt; common fine and medium rounded concretions of iron and manganese oxide; strongly acid; clear wavy boundary.

Cg3—50 to 60 inches; light gray (10YR 6/1) silt loam; common fine prominent yellowish brown (10YR 5/8) and common fine and medium distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; few medium distinct light gray (10YR 7/1 dry) pockets of silt; common coarse rounded concretions of iron and manganese oxide; slightly acid.

The Ap horizon has value of 4 or 5 and chroma of 3 or 4. The C horizon has value of 4 to 6 and chroma of 1 to 4 and is mottled. In some pedons it is stratified silt loam and loam below a depth of 40 inches.

Berks Series

The Berks series consists of moderately deep, well drained, moderately permeable soils on uplands. These soils formed in channery, loamy sandstone residuum. Slopes range from 18 to 30 percent.

Typical pedon of Berks loam, 18 to 30 percent slopes, 1,040 feet west and 940 feet north of the southeast corner of sec. 28, T. 6 S., R. 9 E.

A—0 to 1 inch; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; weak fine granular structure; friable; many fine roots; about 10 percent rock fragments; medium acid; abrupt smooth boundary.

Bw1—1 to 10 inches; dark yellowish brown (10YR 4/4) channery loam; weak fine subangular blocky structure; friable; common medium and coarse roots; about 33 percent rock fragments; very strongly acid; clear smooth boundary.

Bw2—10 to 16 inches; yellowish brown (10YR 5/4) channery loam; weak fine and medium subangular blocky structure; friable; common medium and coarse roots; about 33 percent rock fragments; very strongly acid; gradual wavy boundary.

C—16 to 32 inches; yellowish brown (10YR 5/6) very channery loam; massive; friable; few coarse roots; about 60 percent rock fragments; very strongly acid; clear wavy boundary.
R—32 inches; fractured sandstone bedrock.

The thickness of the solum ranges from 12 to 35 inches. The depth to lithic contact ranges from 20 to 40 inches. The content of rock fragments in the particle-size control section averages more than 35 percent.

The A horizon has value and chroma of 3 or 4. The B horizon has chroma of 3 to 6. The A and B horizons are loam or silt loam in the fine-earth fraction. The content of rock fragments ranges from 15 to 70 percent in the Bw horizon and from 35 to 90 percent in the C horizon.

Bloomfield Series

The Bloomfield series consists of somewhat excessively drained, rapidly permeable soils on dunes and terraces. These soils formed in sandy wind-deposited material. Slopes range from 1 to 18 percent.

Typical pedon of Bloomfield fine sand, 5 to 10 percent slopes, 1,340 feet west and 1,540 feet south of the northeast corner of sec. 6, T. 7 S., R. 10 E.

Ap—0 to 9 inches; brown (10YR 4/3) fine sand, brown (10YR 5/3) dry; weak medium subangular blocky structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.
E—9 to 27 inches; dark yellowish brown (10YR 4/4) loamy sand; weak coarse subangular blocky structure; very friable; few fine roots; slightly acid; gradual wavy boundary.
E&Bt—27 to 48 inches; yellowish brown (10YR 5/6) sand (E) and strong brown (7.5YR 4/6) loamy sand (Bt); single grain (E) and weak medium subangular blocky structure (Bt); loose (E) and friable (Bt); few fine roots; slightly acid; gradual smooth boundary.
Bt&E—48 to 60 inches; brown (7.5YR 4/4) loamy sand (Bt) and yellowish brown (10YR 5/6) sand (E); weak coarse subangular blocky structure (Bt) and single grain (E); friable (Bt) and loose (E); few fine roots; slightly acid.

The solum is more than 60 inches thick. The Ap horizon has chroma of 3 or 4. It is fine sand or loamy fine sand. The E horizon has value of 4 or 5 and chroma of 4 to 6. It has the same range in texture as the Ap horizon. The sandier part of the E&Bt horizon has chroma of 4 to 6. Many of the lamellae in the E&Bt horizon are discontinuous and wavy. The thickness of the lamellae is ¼ to 1 inch in the upper part of the solum and increases to 8 inches in the lower part of the Bt&E horizon. The lamellae have hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 4 to 6. They are commonly loamy sand but range to sandy loam in the lower part of the Bt&E horizon.

Bluford Series

The Bluford series consists of somewhat poorly drained, slowly permeable soils on uplands. These soils formed in loess and in the underlying silty or loamy material, which contains more sand than the loess. Slopes range from 0 to 5 percent.

Typical pedon of Bluford silt loam, 0 to 2 percent slopes, 460 feet east and 2,480 feet south of the northwest corner of sec. 12, T. 7 S., R. 8 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; few fine prominent strong brown (7.5YR 4/6) mottles; weak fine granular structure; friable; many fine roots; few medium rounded concretions of iron and manganese oxide; slightly acid; abrupt smooth boundary.
E1—8 to 11 inches; brown (10YR 5/3) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; many fine roots; few distinct dark grayish brown (10YR 4/2) fillings in worm channels; few medium rounded concretions of iron and manganese oxide; strongly acid; clear smooth boundary.
E2—11 to 18 inches; pale brown (10YR 6/3) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; common fine roots; many prominent white (10YR 8/1 dry) silt coatings on faces of peds; few medium rounded concretions of iron and manganese oxide; strongly acid; clear smooth boundary.
Bt1—18 to 24 inches; brown (10YR 5/3) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common prominent white (10YR 8/1 dry) silt coatings on faces of peds; few medium rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.
Bt2—24 to 29 inches; light brownish gray (10YR 6/2) silty clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure parting to moderate coarse subangular blocky; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few prominent white (10YR 8/1 dry) silt coatings on faces of peds; few medium rounded concretions of iron and manganese oxide; very

strongly acid; clear smooth boundary.
Bt3—29 to 37 inches; brown (10YR 5/3) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium prismatic structure; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few prominent white (10YR 8/1 dry) silt coatings on faces of peds; few medium rounded concretions of iron and manganese oxide; strongly acid; clear smooth boundary.
2Btx—37 to 60 inches; brown (10YR 5/3) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium prismatic structure; firm and brittle; few fine roots; common distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; few prominent white (10YR 8/1 dry) silt coatings on faces of peds; few medium rounded concretions of iron and manganese oxide; few pebbles; medium acid.

The thickness of the solum ranges from 44 to more than 60 inches. The A horizon has value of 4 or 5 and chroma of 2 or 3. The E horizon has value of 4 to 6 and chroma of 2 to 4. The content of clay in the control section ranges from 35 to 42 percent. The 2B horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 3. It is silty clay loam or silt loam and contains more sand and pebbles than the Bt horizon.

Bonnie Series

The Bonnie series consists of poorly drained, moderately slowly permeable soils on flood plains. These soils formed in acid, silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Bonnie silt loam, frequently flooded, 2,120 feet west and 440 feet north of the southeast corner of sec. 5, T. 7 S., R. 8 E.

Ap—0 to 5 inches; grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; few fine prominent strong brown (7.5YR 5/8) mottles; weak medium granular structure; friable; many very fine and fine roots; few distinct light gray (10YR 7/1 dry) silt coatings on faces of peds; medium acid; abrupt smooth boundary.
Cg1—5 to 12 inches; grayish brown (10YR 5/2) silt loam; few fine prominent strong brown (7.5YR 5/8) mottles; massive; friable; common very fine and fine roots; common distinct dark grayish brown (10YR 4/2) organic coatings in pockets; strongly acid; clear smooth boundary.
Cg2—12 to 25 inches; grayish brown (10YR 5/2) silt loam; common fine prominent strong brown (7.5YR 5/6) mottles; massive; friable; very few very fine roots; few fine accumulations of iron and manganese oxide; strongly acid; gradual smooth boundary.
Cg3—25 to 54 inches; light brownish gray (10YR 6/2) silt loam; common fine prominent strong brown (7.5YR 5/8) and few fine prominent reddish yellow (7.5YR 6/6) mottles; massive; friable; few fine accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.
Ab—54 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; few fine prominent strong brown (7.5YR 5/8) mottles; weak medium prismatic structure; friable; common fine accumulations of iron and manganese oxide; medium acid.

The Ap horizon has chroma of 2 or 3. The content of clay in the control section ranges from 18 to 27 percent. The Cg horizon has hue of 10YR or 2.5Y and chroma of 1 or 2. In many areas a buried soil is below a depth of 40 inches. The buried soil is similar in color to the Cg horizon but contains more clay.

Cisne Series

The Cisne series consists of poorly drained, very slowly permeable soils on uplands. These soils formed in loess and in the underlying silty material, which contains more sand than the loess. Slopes range from 0 to 2 percent.

Typical pedon of Cisne silt loam, 1,340 feet east and 2,300 feet north of the southwest corner of sec. 30, T. 6 S., R. 8 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; few very fine roots; neutral; abrupt smooth boundary.
E—7 to 11 inches; grayish brown (10YR 5/2) silt loam; many fine distinct yellowish brown (10YR 5/6) and few fine faint brown (10YR 5/3) mottles; moderate thin platy structure; friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings in root channels; strongly acid; abrupt smooth boundary.
Btg1—11 to 17 inches; light brownish gray (10YR 6/2) silty clay loam; common fine distinct yellowish brown (10YR 5/6) and few fine prominent red (2.5YR 4/8) mottles; moderate fine subangular blocky structure; friable; few very fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; strongly acid; clear smooth boundary.
Btg2—17 to 26 inches; light brownish gray (10YR 6/2) silty clay loam; common fine distinct yellowish brown (10YR 5/6) and common fine prominent

strong brown (7.5YR 5/8) mottles; moderate medium prismatic structure; firm; few very fine roots; many distinct dark gray (10YR 4/1) clay films on faces of peds; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg3—26 to 41 inches; light brownish gray (10YR 6/2) silty clay loam; few fine distinct yellowish brown (10YR 5/4) and common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Btg4—41 to 45 inches; light brownish gray (10YR 6/2) silt loam; many medium prominent strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; firm; few distinct gray (10YR 5/1) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

2Btg5—45 to 60 inches; light gray (10YR 6/1) silty clay loam; common medium prominent strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; firm; few distinct gray (10YR 5/1) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; few pebbles; slightly acid.

The thickness of the solum ranges from 45 to more than 60 inches. The E horizon has value of 5 or 6. The Btg and 2Btg horizons have hue of 2.5Y or 10YR and value of 5 or 6. The Btg horizon is silty clay loam or silty clay in the upper part and silty clay loam or silt loam in the lower part. The 2Btg horizon is silty clay loam, clay loam, or silt loam. The content of clay in the control section ranges from 35 to 45 percent.

Crawleyville Series

The Crawleyville series consists of somewhat poorly drained, moderately permeable soils on terraces. These soils formed in loamy outwash. Slopes range from 0 to 2 percent.

Typical pedon of Crawleyville fine sandy loam, 0 to 2 percent slopes, rarely flooded, 2,170 feet north and 1,790 feet west of the southeast corner of sec. 14, T. 4 S., R. 8 E.

Ap—0 to 10 inches; brown (10YR 4/3) fine sandy loam, very pale brown (10YR 7/3) dry; weak fine granular structure; very friable; few very fine roots; few fine accumulations of iron and manganese oxide; slightly acid; abrupt smooth boundary.

E—10 to 15 inches; brown (10YR 5/3) fine sandy loam; common medium distinct light gray (10YR 7/2) and few fine prominent yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; very friable; few very fine roots; few fine accumulations of iron and manganese oxide; slightly acid; clear smooth boundary.

BE—15 to 18 inches; brown (10YR 5/3) loam; few fine prominent yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable; few very fine roots; many distinct light gray (10YR 7/2) stripped sand grains; medium acid; abrupt smooth boundary.

Btg1—18 to 23 inches; grayish brown (10YR 5/2) clay loam; many fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct light gray (10YR 7/2) stripped sand grains; few fine accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg2—23 to 30 inches; grayish brown (10YR 5/2) clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse subangular blocky structure; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Btg3—30 to 45 inches; grayish brown (10YR 5/2) clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse subangular blocky structure; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct dark grayish brown (10YR 4/2) clay films in channels; common fine accumulations of iron and manganese oxide; slightly acid; gradual smooth boundary.

Btg4—45 to 60 inches; grayish brown (2.5Y 5/2) loam; many medium prominent yellowish brown (10YR 5/8) mottles; weak coarse subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct dark grayish brown (10YR 4/2) clay films in channels; neutral.

The thickness of the solum ranges from 48 to more than 60 inches. The Ap horizon has value of 4 or 5 and chroma of 2 or 3. The Ap and E horizons are fine sandy loam, sandy loam, or loam. The Bt or Btg horizon has value of 5 or 6 and chroma of 2 to 4. It generally is clay loam, but the range includes loam and silty clay loam.

The content of clay in the control section ranges from 27 to 35 percent. The C horizon, if it occurs, is loam or sandy loam.

Creal Series

The Creal series consists of somewhat poorly drained, moderately slowly permeable soils on uplands. These soils formed in a mixture of loess and silty local alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Creal silt loam, 1,660 feet north and 1,120 feet west of the southeast corner of sec. 7, T. 4 S., R. 9 E.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, light gray (10YR 7/2) dry; weak medium platy structure parting to weak fine granular; friable; common fine roots; neutral; abrupt smooth boundary.

E—10 to 22 inches; brown (10YR 5/3) silt loam; many medium faint light brownish gray (10YR 6/2) mottles; weak medium and thin platy structure; friable; few fine roots; few medium rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg1—22 to 36 inches; light brownish gray (2.5Y 6/2) silty clay loam; few medium prominent yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium angular blocky; friable; few fine roots; many distinct brown (10YR 5/3) clay films on faces of peds; common medium and coarse rounded concretions of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Btg2—36 to 49 inches; light brownish gray (2.5Y 6/2) silt loam; common medium prominent yellowish brown (10YR 5/4) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; friable; few very fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; common medium rounded accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

BC—49 to 58 inches; light brownish gray (10YR 6/2) silt loam; many medium faint pale brown (10YR 6/3) and few medium distinct yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; friable; common medium rounded accumulations of iron and manganese oxide; few pebbles; very strongly acid; gradual smooth boundary.

Cg—58 to 60 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) mottles; massive; friable; few medium rounded accumulations of iron and manganese oxide; few pebbles; strongly acid.

The thickness of the solum ranges from 45 to more than 60 inches. The Ap horizon has value of 4 or 5. The E horizon has value of 5 to 7 and chroma of 2 to 4. The Bt or Btg horizon has value of 5 or 6 and chroma of 2 or 3. The content of clay in the control section ranges from 27 to 35 percent.

Dickinson Series

The Dickinson series consists of somewhat excessively drained soils on stream terraces. These soils formed in loamy and sandy outwash. Permeability is moderately rapid in the upper part of the profile and rapid in the lower part. Slopes range from 0 to 5 percent.

Typical pedon of Dickinson fine sandy loam, 0 to 2 percent slopes, 860 feet south and 2,200 feet east of the northwest corner of sec. 34, T. 5 S., R. 10 E.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) fine sandy loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; common very fine roots; neutral; clear smooth boundary.

Bw1—11 to 19 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; friable; few very fine roots; many faint dark brown (10YR 3/3) organic films on faces of peds; slightly acid; clear smooth boundary.

Bw2—19 to 26 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; friable; few very fine roots; few faint dark yellowish brown (10YR 4/4) clay bridges between sand grains; slightly acid; clear smooth boundary.

Bw3—26 to 34 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure; friable; few very fine roots; slightly acid; gradual smooth boundary.

C1—34 to 47 inches; yellowish brown (10YR 5/6) sand; single grain; loose; few very fine roots; slightly acid; abrupt smooth boundary.

C2—47 to 60 inches; dark yellowish brown (10YR 4/6) loamy sand; common fine faint strong brown (7.5YR 5/8) mottles; massive; friable; few very fine roots; few fine rounded soft accumulations of iron and manganese oxide; slightly acid.

The thickness of the solum ranges from 28 to 42 inches. The thickness of the mollic epipedon ranges from 11 to 20 inches.

The Bw horizon has value and chroma of 3 or 4. The content of clay in the control section ranges from 10 to

15 percent, and the content of sand ranges from 50 to 65 percent.

Drury Series

The Drury series consists of well drained, moderately permeable soils on terraces and uplands. These soils formed in silty local alluvium. Slopes range from 2 to 5 percent.

Typical pedon of Drury silt loam, 2 to 5 percent slopes, 1,340 feet east and 1,680 feet south of the northwest corner of sec. 31, T. 6 S., R. 10 E.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; few very fine roots; slightly acid; abrupt smooth boundary.

Bt1—10 to 17 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine subangular blocky structure; friable; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; neutral; clear smooth boundary.

Bt2—17 to 28 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; friable; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; neutral; clear smooth boundary.

Bt3—28 to 42 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few distinct brown (10YR 4/3) clay films on faces of peds; few fine accumulations of iron and manganese oxide; neutral; clear smooth boundary.

C1—42 to 46 inches; dark yellowish brown (10YR 4/4) silt loam; many medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; few fine accumulations of iron; neutral; clear smooth boundary.

C2—46 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; few fine distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; neutral.

The thickness of the solum ranges from 42 to 48 inches. Tillage has mixed the A and E horizons in most pedons. The Bt horizon has hue of 10YR or 7.5Y and chroma of 4 to 6. It is silt loam or silty clay loam.

Evansville Series

The Evansville series consists of poorly drained, moderately permeable soils on lake plains. These soils formed in lacustrine sediments. Slopes range from 0 to 2 percent.

Typical pedon of Evansville silt loam, frequently flooded, 1,660 feet east and 140 feet south of the northwest corner of sec. 36, T. 3 S., R. 9 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; neutral; abrupt smooth boundary.

Bg1—9 to 19 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine distinct light olive brown (2.5Y 5/4) mottles; moderate fine prismatic structure parting to moderate medium subangular blocky; firm; common faint dark grayish brown (2.5Y 4/2) organic coatings on faces of peds; few fine accumulations of iron and manganese oxide; slightly acid; gradual wavy boundary.

Bg2—19 to 32 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine distinct light olive brown (2.5Y 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; many faint dark grayish brown (2.5Y 4/2) organic coatings on faces of peds; common fine accumulations of iron and manganese oxide; neutral; gradual smooth boundary.

Bg3—32 to 46 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium distinct light olive brown (2.5Y 5/6) and few medium distinct light yellowish brown (2.5Y 6/4) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; common distinct gray (10YR 5/1) organic coatings on faces of peds; common fine accumulations of iron and manganese oxide; neutral; gradual wavy boundary.

Cg—46 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam; many medium prominent yellowish brown (10YR 5/6) mottles; massive; firm; few medium accumulations of iron and manganese oxide; mildly alkaline.

The thickness of the solum ranges from 40 to 50 inches. The content of clay in the control section ranges from 25 to 34 percent.

The Ap and Bg horizons are silt loam or silty clay loam. The Ap horizon has hue of 10YR or 2.5Y and value of 4 or 5. The Bg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 to 4.

Ginat Series

The Ginat series consists of poorly drained soils on flood plains. These soils formed in acid, silty alluvium. Permeability is moderate in the upper part of the profile

and very slow in the lower part. Slopes range from 0 to 2 percent.

Typical pedon of Ginat silt loam, occasionally flooded, 1,980 feet west and 400 feet north of the southeast corner of sec. 26, T. 5 S., R. 9 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; few very fine roots; few distinct white (10YR 8/1 dry) pockets of silt; neutral; abrupt smooth boundary.

Eg1—6 to 10 inches; dark grayish brown (10YR 4/2) silt loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; moderate very thin platy structure; friable; few very fine roots; slightly acid; clear smooth boundary.

Eg2—10 to 16 inches; light brownish gray (10YR 6/2) silt loam; few fine distinct yellowish brown (10YR 5/6) and many medium faint brown (10YR 5/3) mottles; moderate medium platy structure; friable; few very fine roots; strongly acid; abrupt smooth boundary.

Btg—16 to 24 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct yellowish brown (10YR 5/6) mottles; strong medium prismatic structure; firm; few very fine roots; very strongly acid; abrupt smooth boundary.

Btxg1—24 to 43 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) and common medium faint light brownish gray (10YR 6/2) mottles; strong coarse prismatic structure; firm and brittle; strongly acid; gradual smooth boundary.

Btxg2—43 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium prominent yellowish brown (10YR 5/6) and common medium distinct grayish brown (10YR 5/2) mottles; moderate coarse prismatic structure; firm and brittle; strongly acid.

The solum is more than 60 inches thick. The Ap horizon has value of 4 or 5 and chroma of 2 or 3. The E horizon has value of 4 to 7. The Bt horizon has value of 5 to 7. It is silt loam or silty clay loam. The Btx horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It commonly is silty clay loam but is clay loam in some pedons. The content of clay in the control section ranges from 25 to 35 percent.

Grantsburg Series

The Grantsburg series consists of moderately well drained soils on uplands. These soils formed in loess and are underlain by weathered sandstone at a depth of more than 5 feet. Permeability is moderate in the upper part of the profile and very slow in the lower part. Slopes range from 2 to 5 percent.

Typical pedon of Grantsburg silt loam, 2 to 5 percent slopes, 2,560 feet south and 280 feet east of the northwest corner of sec. 20, T. 6 S., R. 9 E.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; many very fine roots; common fine accumulations of iron and manganese oxide; neutral; abrupt smooth boundary.

BE—7 to 10 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; many very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine accumulations of iron and manganese oxide; neutral; clear smooth boundary.

Bt1—10 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; many very fine roots; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine accumulations of iron and manganese oxide; neutral; clear smooth boundary.

Bt2—16 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; many very fine roots; many faint yellowish brown (10YR 5/4) clay films on faces of peds; few fine accumulations of iron and manganese oxide; slightly acid; clear smooth boundary.

B/E—22 to 26 inches; yellowish brown (10YR 5/4) silty clay loam (B) and light gray (10YR 7/2 dry) silt (E); moderate fine and medium subangular blocky structure; friable; common very fine roots; few fine accumulations of iron and manganese oxide; strongly acid; gradual smooth boundary.

B't—26 to 34 inches; yellowish brown (10YR 5/6) silty clay loam; few fine faint brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; common very fine roots; many distinct dark yellowish brown (10YR 4/4) clay films and common distinct light gray (10YR 7/2 dry) silt coatings on faces of peds; few fine accumulations of iron and manganese oxide; strongly acid; gradual smooth boundary.

Btx1—34 to 42 inches; strong brown (7.5YR 5/6) silt loam; common medium prominent pale brown (10YR 6/3) and few fine distinct brownish yellow (10YR 6/6) mottles; weak medium prismatic structure parting to weak coarse subangular blocky; firm and brittle; few very fine roots; common prominent dark yellowish brown (10YR 4/4) clay films on faces of peds; common distinct light gray (10YR 7/2 dry) silt coatings along vertical cracks;

few fine accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Btx2—42 to 55 inches; strong brown (7.5YR 5/6) silt loam; many medium prominent pale brown (10YR 6/3) mottles; weak coarse subangular blocky structure; firm and brittle; few prominent dark yellowish brown (10YR 4/4) clay films on faces of peds; common distinct light gray (10YR 7/2 dry) silt coatings on faces of peds and in cracks; common medium accumulations of iron and manganese oxide along vertical cracks; medium acid; gradual smooth boundary.

C—55 to 60 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common medium accumulations of iron and manganese oxide along vertical cracks; slightly acid.

The thickness of the solum ranges from 55 to more than 60 inches. Depth to the Btx horizon ranges from 24 to 34 inches.

The Ap horizon has chroma of 2 or 3. Tillage has mixed the Ap and E horizons in most pedons. The E horizon, if it occurs, has chroma of 3 or 4. The Bt horizon has chroma of 4 to 6. The content of clay in the control section ranges from 25 to 30 percent. The Btx horizon has hue of 10YR or 7.5YR and value of 4 or 5. It is silt loam or silty clay loam.

Harco Series

The Harco series consists of somewhat poorly drained, moderately permeable soils on lake plains. These soils formed in unstratified, silty sediments. Slopes range from 0 to 2 percent.

Typical pedon of Harco silt loam, 280 feet east and 1,100 feet north of the southwest corner of sec. 31, T. 4 S., R. 11 E.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

A—8 to 19 inches; black (10YR 2/1) silty clay loam, dark grayish brown (10YR 4/2) dry; few fine distinct brown (10YR 4/3) mottles; weak fine prismatic structure parting to weak medium subangular blocky; firm; many fine roots; few medium rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

Bt1—19 to 23 inches; light olive brown (2.5Y 5/4) silty clay loam; common fine prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; common fine roots; many prominent very dark gray (10YR 3/1) clay films on faces of peds; few medium rounded concretions of iron and manganese oxide; neutral; gradual smooth boundary.

Bt2—23 to 35 inches; light olive brown (2.5Y 5/4) silty clay loam; few fine prominent grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; weak medium prismatic structure; firm; common fine roots; many prominent very dark gray (10YR 3/1) clay films on faces of peds; few medium rounded concretions of iron and manganese oxide; neutral; gradual smooth boundary.

Btg—35 to 43 inches; light brownish gray (2.5Y 6/2) silty clay loam; many medium prominent yellowish brown (10YR 5/6) mottles; weak medium prismatic structure; friable; few fine roots; few distinct dark gray (10YR 4/1) and very dark gray (10YR 3/1) clay films on faces of peds; neutral; gradual smooth boundary.

Cg—43 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; many medium prominent yellowish brown (10YR 5/6) mottles; massive; friable; few distinct dark gray (10YR 4/1) clay films in root channels and pores; slight effervescence; mildly alkaline.

The thickness of the solum and the depth to free carbonates range from 43 to 55 inches. The thickness of the mollic epipedon ranges from 12 to 20 inches.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Bt and Btg horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4.

Haymond Series

The Haymond series consists of well drained, moderately permeable soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 2 percent..

The Haymond soils in this survey area are taxadjuncts because they have a cambic horizon. This difference, however, does not significantly affect the use or behavior of the soils.

Typical pedon of Haymond silt loam, frequently flooded, 1,700 feet north and 25 feet west of the southeast corner of sec. 26, T. 6 S., R. 9 E.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; few very fine roots; slightly acid; abrupt smooth boundary.

Bw1—8 to 21 inches; brown (10YR 5/3) silt loam; weak medium and fine subangular blocky structure; friable; few faint brown (10YR 4/3) organic coatings on faces of peds; neutral; gradual smooth boundary.

Bw2—21 to 41 inches; yellowish brown (10YR 5/4) silt loam; weak medium and coarse subangular blocky structure; friable; few very fine roots; few faint

brown (10YR 5/3) organic coatings on faces of peds; neutral; gradual wavy boundary.
2Bt—41 to 60 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; friable; common distinct brown (10YR 5/3) clay films on faces of peds; neutral.

The A horizon has value of 4 or 5 and chroma of 3 or 4.

Henshaw Series

The Henshaw series consists of somewhat poorly drained, moderately slowly permeable soils on lake plains. These soils formed in silty material. Slopes range from 0 to 2 percent.

Typical pedon of Henshaw silt loam, rarely flooded, 2,160 feet west and 120 feet south of the northeast corner of sec. 4, T. 4 S., R. 10 E.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; few very fine roots; slightly acid; abrupt smooth boundary.
E—6 to 11 inches; brownish yellow (10YR 6/6) silt loam; weak medium platy structure; very friable; few very fine roots; few fine rounded concretions of iron and manganese oxide; strongly acid; clear smooth boundary.
Bt1—11 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; friable; few very fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; many prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.
Bt2—17 to 31 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine roots; common distinct grayish brown (10YR 5/2) and dark yellowish brown (10YR 4/6) clay films on faces of peds; many prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.
Btg—31 to 44 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; common prominent white (10YR 8/1 dry) silt coatings on faces of peds; common fine rounded concretions of iron and manganese oxide; medium acid; gradual smooth boundary.
Cg—44 to 60 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few very fine roots; few fine rounded concretions of iron and manganese oxide; slight effervescence; mildly alkaline.

The thickness of the solum and the depth to free carbonates range from 40 to 60 inches. The Ap horizon has value of 4 or 5. The E horizon has value of 5 or 6 and chroma of 3 to 6. The Bt and Btg horizons have value of 5 or 6 and chroma of 2 to 6. The Cg or C horizon is silty clay loam or stratified silt loam to sandy loam.

Hickory Series

The Hickory series consists of well drained, moderately permeable soils on uplands. These soils formed in a thin layer of loess and in the underlying glacial till. Slopes range from 10 to 50 percent.

Typical pedon of Hickory loam, 30 to 50 percent slopes, 2,400 feet north and 180 feet west of the southeast corner of sec. 9, T. 7 S., R. 8 E.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; few fine roots; neutral; clear smooth boundary.
E—2 to 5 inches; yellowish brown (10YR 5/4) loam; weak fine subangular blocky structure; friable; few fine roots; medium acid; clear smooth boundary.
Bt1—5 to 15 inches; yellowish brown (10YR 5/6) clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; many distinct yellowish brown (10YR 5/4) clay films on faces of peds; few pebbles; strongly acid; clear smooth boundary.
Bt2—15 to 25 inches; yellowish brown (10YR 5/6) clay loam; moderate medium and fine subangular blocky structure; firm; few very fine roots; many distinct yellowish brown (10YR 5/6) clay films on faces of peds; few pebbles; strongly acid; gradual smooth boundary.
Bt3—25 to 35 inches; yellowish brown (10YR 5/6) clay loam; few fine distinct pale brown (10YR 6/3) and grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; few very fine roots; common distinct yellowish brown (10YR 5/6) clay films on faces of peds; few pebbles; strongly acid; clear smooth boundary.
Bk—35 to 46 inches; yellowish brown (10YR 5/4) clay

loam; few fine distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; firm; few very fine roots; few distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) clay films on faces of peds; few fine concretions of calcium carbonate; few fine accumulations of iron and manganese oxide; few pebbles; neutral; slight effervescence; clear smooth boundary.

C—46 to 60 inches; yellowish brown (10YR 5/4) loam; massive; firm; common pebbles; strong effervescence; mildly alkaline.

The thickness of the solum ranges from 45 to more than 60 inches. The loess is 0 to 20 inches deep over till.

The A horizon generally is loam but is silt loam in some pedons. It generally has value of 4 or 5 and chroma of 2 or 3. In some pedons it is thin and has value of 3. The Bt horizon has hue of 10YR or 7.5YR and chroma of 4 to 6. The content of clay in the control section ranges from 27 to 35 percent, and the content of sand is more than 15 percent.

Hosmer Series

The Hosmer series consists of moderately well drained soils on uplands. These soils formed in loess. Permeability is moderate in the upper part of the profile and slow in the lower part. Slopes range from 2 to 10 percent.

Typical pedon of Hosmer silt loam, 2 to 5 percent slopes, 2,340 feet east and 1,100 feet north of the southwest corner of sec. 2, T. 4 S., R. 10 E.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; few very fine roots; few fine rounded accumulations of iron and manganese oxide; neutral; abrupt smooth boundary.

E—6 to 10 inches; yellowish brown (10YR 5/4) silt loam; few fine prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure parting to moderate fine subangular blocky; friable; few very fine roots; few fine rounded accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

Bt—10 to 18 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; many faint strong brown (7.5YR 5/6) clay films on faces of peds; few distinct light yellowish brown (10YR 6/4) silt coatings on faces of peds; few very fine roots; few fine rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

B/E—18 to 21 inches; strong brown (7.5YR 5/6) silty clay loam (B) and pale brown (10YR 6/3) silt loam (E); moderate medium subangular blocky structure; firm; few faint strong brown (7.5YR 5/6) clay films on faces of peds; few very fine roots; few fine rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

B't—21 to 28 inches; strong brown (7.5YR 5/6) silty clay loam; few fine distinct yellowish red (5YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common faint strong brown (7.5YR 4/6) clay films on faces of peds; common prominent light brownish gray (10YR 6/2) silt coatings on faces of peds; strongly acid; clear smooth boundary.

Btx1—28 to 36 inches; strong brown (7.5YR 5/6) silty clay loam; many medium and coarse prominent light brownish gray (10YR 6/2) and few fine distinct yellowish red (5YR 5/6) mottles; moderate medium prismatic structure; firm and brittle; common faint strong brown (7.5YR 4/6) clay films on faces of peds; common prominent light brownish gray (10YR 6/2) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

Btx2—36 to 52 inches; strong brown (7.5YR 5/6) silty clay loam; many medium and coarse prominent light brownish gray (10YR 6/2) and common medium distinct brown (7.5YR 4/4) mottles; moderate coarse prismatic structure; firm and brittle; few fine rounded accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

C—52 to 60 inches; about 50 percent strong brown (7.5YR 5/8) and 50 percent light yellowish brown (10YR 6/4) silt loam; common medium prominent light brownish gray (10YR 6/2) and few medium distinct brown (7.5YR 4/4) mottles; massive; firm; few fine rounded accumulations of iron and manganese oxide; medium acid.

The thickness of the solum ranges from 33 to more than 60 inches. Depth to the Btx horizon ranges from 24 to 35 inches.

The Ap horizon has value of 4 or 5 and chroma of 3 or 4. Tillage has mixed the A and E horizons in most pedons. The E horizon has hue of 10YR or 7.5YR and chroma of 4 to 8. The content of clay in the control section ranges from 25 to 32 percent.

Houghton Series

The Houghton series consists of very poorly drained, moderately permeable soils in sloughs and old river channels on flood plains. These soils formed in highly

decomposed herbaceous material. Slopes are less than 2 percent.

Typical pedon of Houghton muck, frequently flooded, 100 feet north and 80 feet west of the southeast corner of sec. 11, T. 5 S., R. 9 E.

Oa1—0 to 25 inches; black (N 2/0) sapric material; about 10 percent fiber, a trace rubbed; weak fine subangular blocky structure; friable; many fine and very fine roots; neutral; clear smooth boundary.

Oa2—25 to 30 inches; black (10YR 2/1) sapric material; about 15 percent fiber, less than 3 percent rubbed; moderate medium subangular blocky structure; friable; common coarse woody fragments; few fine and very fine roots; neutral; clear smooth boundary.

Oa3—30 to 60 inches; very dark brown (10YR 2/2) sapric material; about 20 percent fiber, less than 5 percent rubbed; massive; friable; common coarse woody fragments; few fine and very fine roots; neutral.

The organic material is more than 51 inches thick. It has value of 2 or 3 and chroma of 0 to 2.

Hoyleton Series

The Hoyleton series consists of somewhat poorly drained, slowly permeable soils on uplands. These soils formed in loess and in the underlying silty or loamy glacial till. Slopes range from 0 to 5 percent.

Typical pedon of Hoyleton silt loam, 2 to 5 percent slopes, 2,140 feet east and 140 feet north of the southwest corner of sec. 19, T. 6 S., R. 8 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

E1—9 to 13 inches; brown (10YR 5/3) silt loam; moderate fine subangular blocky structure; friable; common very fine roots; few distinct dark brown (10YR 3/3) organic coatings in root channels; medium acid; clear smooth boundary.

E2—13 to 17 inches; brown (10YR 5/3) silt loam; few fine prominent red (2.5YR 4/6) and common fine distinct yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; friable; common very fine roots; few distinct light gray (10YR 7/2 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

B/E—17 to 20 inches; yellowish brown (10YR 5/4) silty clay loam (B) and white (10YR 8/1 dry) silt (E); common fine prominent red (2.5YR 4/6) mottles; moderate medium angular blocky structure; firm; common very fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; very strongly acid; abrupt smooth boundary.

Bt1—20 to 30 inches; yellowish brown (10YR 5/6) silty clay; common fine and medium prominent red (2.5YR 4/6) mottles; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common very fine roots; many prominent dark gray (10YR 4/1) and dark grayish brown (10YR 4/2) clay films on faces of peds; common prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

Bt2—30 to 36 inches; yellowish brown (10YR 5/6) silty clay loam; common fine distinct yellowish brown (10YR 5/8) mottles; moderate fine prismatic structure; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; strongly acid; gradual smooth boundary.

2BC—36 to 46 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct yellowish brown (10YR 5/8) mottles; weak coarse prismatic structure; firm; few distinct brown (10YR 5/3) clay films on faces of peds; common prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; medium acid; gradual smooth boundary.

2C—46 to 60 inches; yellowish brown (10YR 5/6) silt loam; few medium distinct brown (10YR 5/3) mottles; massive; friable; few fine rounded accumulations of iron and manganese oxide; slightly acid.

The thickness of the solum ranges from 45 to more than 60 inches. The Ap horizon has chroma of 2 or 3. The E horizon has value of 4 to 6 and chroma of 3 or 4. The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 6. It is silty clay loam or silty clay. The content of clay in the control section ranges from 35 to 45 percent.

Landes Series

The Landes series consists of well drained soils on flood plains. These soils formed in stratified, loamy and sandy alluvium. Permeability is moderately rapid in the upper part of the profile and rapid in the lower part. Slopes range from 0 to 2 percent.

Typical pedon of Landes sandy loam, frequently

flooded, 1,000 feet west and 1,800 feet north of the southeast corner of sec. 29, T. 4 S., R. 14 W.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; few very fine roots; slightly acid; abrupt smooth boundary.

A—11 to 19 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; friable; many faint very dark brown (10YR 2/2) organic coatings on faces of peds; few very fine roots; neutral; clear smooth boundary.

Bw1—19 to 27 inches; brown (10YR 4/3) sandy loam; moderate medium subangular blocky structure; friable; few distinct dark brown (10YR 3/3) organic coatings on faces of peds; few very fine roots; neutral; clear smooth boundary.

Bw2—27 to 37 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure; very friable; neutral; abrupt smooth boundary.

C1—37 to 41 inches; dark yellowish brown (10YR 4/4) sand; single grain; loose; neutral; abrupt smooth boundary.

C2—41 to 51 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; very friable; neutral; abrupt smooth boundary.

C3—51 to 60 inches; pale brown (10YR 6/3) sand; single grain; loose; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 27 to 37 inches. The thickness of the mollic epipedon ranges from 12 to 20 inches.

The Ap horizon has chroma of 1 to 3. The Bw horizon is sandy loam, fine sandy loam, loam, or loamy sand. The C horizon has colors similar to those of the Bw horizon. It is loamy sand or sand. It has free carbonates in some pedons.

Marissa Series

The Marissa series consists of somewhat poorly drained, moderately permeable or moderately slowly permeable soils on lake plains and terraces. These soils formed in silty material. Slopes range from 0 to 2 percent.

Typical pedon of Marissa silt loam, rarely flooded, 2,180 feet east and 1,960 feet north of the southwest corner of sec. 9, T. 4 S., R. 8 E.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium and fine granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.

E—10 to 13 inches; dark grayish brown (10YR 4/2) silt loam; weak medium subangular blocky structure; friable; few fine roots; few prominent white (10YR 8/1 dry) silt coatings in pockets; common faint very dark grayish brown (10YR 3/2) organic coatings in worm and root channels; few fine rounded concretions of iron and manganese oxide; slightly acid; clear wavy boundary.

Btg1—13 to 18 inches; dark grayish brown (10YR 4/2) silty clay loam; common fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium and coarse subangular blocky structure; firm; few fine roots; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Btg2—18 to 32 inches; dark grayish brown (2.5Y 4/2) silty clay loam; common medium distinct olive brown (2.5 4/4) mottles; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; firm; few very fine roots; many distinct dark gray (10YR 4/1) and very dark gray (10YR 3/1) clay films on faces of peds; common fine rounded concretions of iron and manganese oxide; slightly acid; gradual smooth boundary.

Bt—32 to 46 inches; light olive brown (2.5Y 5/4) silty clay loam; few fine prominent yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; many distinct dark grayish brown (2.5Y 4/2) and common distinct dark gray (10YR 4/1) clay films on faces of peds; common fine rounded concretions of iron and manganese oxide; neutral; gradual smooth boundary.

Bk—46 to 57 inches; light olive brown (2.5Y 5/4) silt loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure; friable; few distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; common fine accumulations of iron and manganese oxide; slight effervescence; mildly alkaline; gradual wavy boundary.

C—57 to 60 inches; light olive brown (2.5Y 5/4) silt loam; common medium faint light yellowish brown (2.5Y 6/4) and few medium prominent yellowish brown (10YR 5/6) mottles; massive; friable; common fine accumulations of iron and manganese oxide; few medium light colored concretions of calcium carbonate; strong effervescence; mildly alkaline.

The thickness of the solum and the depth to free carbonates range from 43 to 58 inches. The thickness of the mollic epipedon ranges from 10 to 14 inches.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Btg and Bt horizons have value of 4 to 6 and chroma of 1 to 4.

Markland Series

The Markland series consists of well drained, slowly permeable soils on lake plains. These soils formed in fine textured lacustrine sediments. Slopes range from 2 to 10 percent.

Typical pedon of Markland silt loam, 5 to 10 percent slopes, eroded, rarely flooded, 520 feet west and 1,800 feet south of the northeast corner of sec. 33, T. 3 S., R. 10 E.

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate fine and medium granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

2Bt1—8 to 20 inches; yellowish brown (10YR 5/6) silty clay; moderate medium subangular blocky structure; firm; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; few distinct white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.

2Bt2—20 to 28 inches; yellowish brown (10YR 5/6) silty clay; moderate medium prismatic structure parting to strong coarse angular blocky; firm; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; few distinct white (10YR 8/1 dry) silt coatings on faces of peds; many very coarse irregular accumulations of iron and manganese oxide; few fine rounded concretions of iron and manganese oxide; slightly acid; gradual smooth boundary.

2Bt3—28 to 39 inches; yellowish brown (10YR 5/6) silty clay; common fine distinct brownish yellow (10YR 6/8) mottles; moderate medium prismatic structure parting to moderate coarse angular blocky; firm; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; few distinct white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

2C1—39 to 46 inches; light yellowish brown (2.5Y 6/4) silty clay that has a few strata of silt loam and silty clay loam; common fine distinct yellowish brown (10YR 5/4) mottles; massive; firm; common distinct brown (10YR 5/3) clay films on vertical cleavage planes; few fine irregular concretions of iron and manganese oxide; strong effervescence; mildly alkaline; clear smooth boundary.

2C2—46 to 60 inches; yellowish brown (10YR 5/4) silty clay; few fine distinct brownish yellow (10YR 6/6) mottles; massive; firm; few distinct brown (10YR 5/3) clay films on vertical cleavage planes; common coarse light colored irregular accumulations of calcium carbonate; few fine rounded accumulations of iron and manganese oxide; violent effervescence; moderately alkaline.

The loess is less than 20 inches deep over lacustrine sediments. The depth to free carbonates ranges from 24 to 40 inches.

The Ap horizon generally is silt loam but is silty clay loam in some severely eroded areas. It has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Some pedons have a thin A horizon, which has value of 3 and chroma of 2. The Bt or 2Bt horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is silty clay loam or silty clay. The content of clay in the control section ranges from 40 to 50 percent. The C horizon is stratified silt loam to silty clay. It commonly has concretions of calcium carbonate.

McGary Series

The McGary series consists of somewhat poorly drained, slowly permeable soils on lake plains. These soils formed in fine textured lacustrine sediments. Slopes range from 0 to 5 percent.

Typical pedon of McGary silt loam, 0 to 2 percent slopes, rarely flooded, 1,840 feet west and 120 feet south of the northeast corner of sec. 34, T. 3 S., R. 10 E.

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; moderate fine granular structure; friable; common very fine roots; common distinct white (10YR 8/1 dry) silt coatings in pockets; neutral; abrupt smooth boundary.

Bt—8 to 16 inches; brown (10YR 5/3) silty clay; common fine faint yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) mottles; moderate very fine subangular blocky structure; firm; few very fine roots; many distinct light brownish gray (2.5Y 6/2) clay films on faces of peds; medium acid; gradual smooth boundary.

Btg1—16 to 30 inches; light brownish gray (2.5Y 6/2) silty clay; many fine distinct light olive brown (2.5Y 5/4) and few fine prominent yellowish brown (10YR 5/6) mottles; weak medium prismatic structure; firm; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide;

medium acid; gradual smooth boundary.
Btg2—30 to 39 inches; grayish brown (2.5Y 5/2) silty clay; many fine distinct light olive brown (2.5Y 5/4) and few fine prominent yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to weak coarse subangular blocky; firm; few distinct gray (10YR 5/1) and common distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium rounded concretions of iron and manganese oxide; neutral; gradual smooth boundary.
C1—39 to 50 inches; light olive brown (2.5Y 5/4) silty clay loam; common medium prominent light brownish gray (10YR 6/2) and few medium distinct light olive brown (2.5Y 5/6) mottles; massive; firm; few distinct grayish brown (10YR 5/2) clay films on vertical cleavage planes; few fine and medium rounded concretions of iron and manganese oxide; slight effervescence; moderately alkaline; gradual smooth boundary.
C2—50 to 60 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; massive; firm; few distinct gray (10YR 5/1) clay films on vertical cleavage planes; few fine and medium rounded concretions of iron and manganese oxide; few medium irregular concretions of calcium carbonate; strong effervescence; moderately alkaline.

The loess is less than 20 inches deep over lacustrine sediments. The depth to free carbonates ranges from 24 to 40 inches.

The Ap horizon is dominantly silt loam but is silty clay loam in some eroded areas. It has value of 4 or 5 and chroma of 2 to 4. The Bt and Btg horizons have value of 4 to 6 and chroma of 2 to 4. They are silty clay loam or silty clay. The content of clay in the control section ranges from 35 to 45 percent. The C horizon generally is silty clay loam but in some pedons is stratified with coarser textured material. It commonly has concretions of calcium carbonate.

Meadowbank Series

The Meadowbank series consists of well drained soils on stream terraces. These soils formed in silty material and in the underlying loamy outwash. Permeability is moderate in the upper part of the profile and rapid in the lower part. Slopes range from 0 to 5 percent.

Typical pedon of Meadowbank silt loam, 0 to 2 percent slopes, 180 feet east and 740 feet north of the southwest corner of sec. 22, T. 5 S., R. 10 E.

Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; few very fine roots; neutral; abrupt smooth boundary.
A—8 to 19 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; moderate fine subangular blocky structure; friable; few very fine roots; neutral; clear smooth boundary.
Bt1—19 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; many distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; neutral; clear smooth boundary.
Bt2—26 to 36 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; many distinct dark brown (10YR 3/3) clay films on faces of peds; neutral; clear smooth boundary.
2Bt3—36 to 45 inches; brown (7.5YR 4/4) loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; common distinct dark brown (7.5YR 3/4) clay films on faces of peds; neutral; clear smooth boundary.
2Bt4—45 to 49 inches; strong brown (7.5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; common distinct dark brown (7.5YR 3/4) clay films on faces of peds; slightly acid; clear smooth boundary.
2E&Bt—49 to 60 inches; light yellowish brown (10YR 6/4) sand (E) that has lamellae of strong brown (7.5YR 4/6) and yellowish brown (10YR 5/4) sandy loam and loamy sand (Bt); single grain and loose (E) and massive and very friable (Bt); few distinct dark brown (7.5YR 3/4) clay bridges (Bt); slightly acid.

The solum is more than 60 inches thick. The thickness of the mollic epipedon ranges from 13 to 19 inches. The loess is 26 to 39 inches deep over outwash.

The Ap horizon has value and chroma of 2 or 3. The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The content of clay in the control section ranges from 24 to 35 percent. The 2Bt horizon has colors similar to those of the Bt horizon. It is dominantly clay loam, loam, or sandy loam, but in some pedons the upper part is silty clay loam that has a noticeable amount of sand. In some pedons the 2E&Bt horizon extends to a depth of more than 80 inches. It is stratified sand, loamy sand, or sandy loam. The heavier textures are in the lamellae. Some pedons have a C horizon within a depth of 70 inches.

Montgomery Series

The Montgomery series consists of very poorly drained, slowly permeable soils on lake plains. These soils formed in fine textured lacustrine sediments. Slopes are less than 2 percent.

The Montgomery soils in this survey area are taxadjuncts because the mineralogy is montmorillonitic. This difference, however, does not significantly affect the use or behavior of the soils.

Typical pedon of Montgomery silty clay, rarely flooded, 1,480 feet east and 1,440 feet south of the northwest corner of sec. 34, T. 3 S., R. 10 E.

Ap—0 to 9 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; moderate very fine subangular blocky structure; a plowpan at a depth of 5 to 9 inches; firm; few very fine roots; neutral; abrupt smooth boundary.

A—9 to 14 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; common fine distinct dark grayish brown (2.5Y 4/2) mottles; moderate fine subangular blocky structure; firm; few very fine roots; neutral; clear smooth boundary.

Bg1—14 to 19 inches; very dark grayish brown (2.5Y 3/2) silty clay; common fine distinct olive brown (2.5Y 4/4) mottles; weak fine prismatic structure parting to moderate fine subangular blocky; firm; few very fine roots; many distinct very dark gray (10YR 3/1) pressure faces on peds; neutral; clear smooth boundary.

Bg2—19 to 28 inches; dark grayish brown (2.5Y 4/2) silty clay; common fine distinct olive brown (2.5Y 4/4) mottles; moderate medium prismatic structure parting to moderate fine subangular blocky; firm; few very fine roots; many distinct dark gray (5Y 4/1) pressure faces on peds; neutral; gradual smooth boundary.

Bg3—28 to 39 inches; olive gray (5Y 5/2) silty clay; many fine prominent light olive brown (2.5Y 5/4) mottles; moderate medium prismatic structure; firm; few very fine roots; many distinct gray (5Y 5/1) pressure faces on peds; neutral; gradual smooth boundary.

BCg—39 to 57 inches; grayish brown (2.5Y 5/2) silty clay loam; many medium distinct light olive brown (2.5Y 5/4) mottles; weak medium prismatic structure; friable; few very fine roots; many distinct gray (5Y 5/1) pressure faces on peds; few fine rounded concretions of iron and manganese oxide; slight effervescence; mildly alkaline; gradual smooth boundary.

Cg—57 to 60 inches; light gray (10YR 6/1) silty clay loam; many medium prominent (2.5Y 5/4) and few medium prominent light olive brown (2.5Y 5/6) mottles; massive; friable; few fine rounded concretions of iron and manganese oxide; strong effervescence; mildly alkaline.

The thickness of the solum ranges from 48 to 60 inches. The thickness of the mollic epipedon ranges from 11 to 18 inches.

The A horizon has hue of 10YR or 2.5Y and chroma of 1 or 2. It is silty clay loam or silty clay. The Bg horizon has value of 3 to 5 and chroma of 1 or 2. It is silty clay loam or silty clay. The content of clay in the control section ranges from 35 to 50 percent.

Muren Series

The Muren series consists of moderately well drained, moderately permeable soils on uplands. These soils formed in loess. Slopes range from 2 to 5 percent.

Typical pedon of Muren silt loam, 2 to 5 percent slopes, 300 feet north and 240 feet east of the center of sec. 35, T. 6 S., R. 9 E.

Ap—0 to 9 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate fine granular structure; friable; common very fine roots; slightly acid; abrupt smooth boundary.

E—9 to 14 inches; yellowish brown (10YR 5/4) silt loam; moderate thin platy structure; friable; few very fine roots; many distinct white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; slightly acid; abrupt smooth boundary.

Bt1—14 to 23 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium prismatic structure parting to moderate fine subangular blocky; firm; few very fine roots; many faint brown (7.5YR 5/4) clay films on faces of peds; common distinct white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

Bt2—23 to 35 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct yellowish brown (10YR 5/8) and grayish brown (10YR 5/2) mottles; moderate medium prismatic structure parting to moderate fine subangular blocky; firm; few very fine roots; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; common distinct white (10YR 8/1 dry) silt coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt3—35 to 51 inches; yellowish brown (10YR 5/6) silty clay loam; common fine distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) mottles; weak medium prismatic structure; firm; few distinct

yellowish brown (10YR 5/4) clay films on faces of peds; very few distinct white (10YR 8/1 dry) silt coatings on faces of peds; common fine and medium rounded concretions of iron and manganese oxide; medium acid; gradual smooth boundary.

C—51 to 60 inches; yellowish brown (10YR 5/6) silt loam; many medium distinct light brownish gray (10YR 6/2) and common medium prominent strong brown (7.5YR 5/8) mottles; massive; friable; common fine and medium rounded concretions of iron and manganese oxide; slightly acid.

The thickness of the solum ranges from 45 to 55 inches. The depth to free carbonates is more than 60 inches.

The Ap horizon has value of 4 or 5 and chroma of 2 or 3. The E and Bt horizons have chroma of 4 to 6. The Bt horizon generally is silty clay loam but in some pedons is silt loam in the lower part. The content of clay in the control section ranges from 27 to 35 percent.

Negley Series

The Negley series consists of well drained soils on uplands. These soils formed in glacial outwash. Permeability is moderate or moderately rapid. Slopes range from 18 to 30 percent.

Typical pedon of Negley loam, 18 to 30 percent slopes, 50 feet west and 2,300 feet north of the southeast corner of sec. 34, T. 3 S., R. 9 E.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate very fine subangular blocky structure parting to moderate fine granular; friable; few fine roots; about 1 percent gravel; neutral; abrupt smooth boundary.

E—3 to 7 inches; brown (10YR 4/3) loam; moderate fine subangular blocky structure; friable; few fine and medium roots; about 1 percent gravel; neutral; clear smooth boundary.

EB—7 to 15 inches; strong brown (7.5YR 4/6) loam; moderate fine subangular blocky structure; friable; few fine and medium roots; about 1 percent gravel; slightly acid; clear smooth boundary.

Bt1—15 to 34 inches; yellowish red (5YR 4/6) loam; moderate medium subangular blocky structure; friable; few fine and medium roots; few distinct strong brown (7.5YR 4/6) clay films on faces of peds; about 1 percent gravel; very strongly acid; gradual smooth boundary.

Bt2—34 to 47 inches; yellowish red (5YR 4/6) sandy clay loam; moderate coarse subangular blocky structure; friable; few fine roots; few distinct reddish brown (5YR 4/4) clay films on faces of peds; about 1 percent gravel; strongly acid; clear smooth boundary.

Bt3—47 to 60 inches; yellowish red (5YR 5/8) sandy clay loam; weak coarse subangular blocky structure; friable; few fine roots; few distinct yellowish red (5YR 5/6) clay films on faces of peds; about 1 percent gravel; very strongly acid.

The solum is more than 60 inches thick. The A and E horizons are commonly loam but are silt loam in some pedons. They have chroma of 2 or 3. The Bt horizon has hue of 7.5YR or 5YR and chroma of 4 to 8. It is loam, clay loam, or sandy clay loam.

Newark Series

The Newark series consists of somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Newark silty clay loam, frequently flooded, 900 feet west and 360 feet north of the southeast corner of sec. 33, T. 4 S., R. 14 W.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silty clay loam, grayish brown (10YR 5/2) dry; weak medium granular structure; a plowpan at a depth of 3 to 10 inches; firm; few very fine roots; neutral; abrupt smooth boundary.

Bw1—10 to 16 inches; brown (10YR 4/3) silty clay loam; few fine faint dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; few very fine roots; many distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds and in root channels; few fine rounded accumulations of iron and manganese oxide; neutral; gradual smooth boundary.

Bw2—16 to 24 inches; brown (10YR 4/3) silty clay loam; many medium distinct dark grayish brown (2.5Y 4/2) and few fine faint dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; few very fine roots; few distinct dark gray (10YR 4/1) clay films in root channels; few fine rounded accumulations of iron and manganese oxide; neutral; gradual smooth boundary.

Bg—24 to 37 inches; dark grayish brown (10YR 4/2) silty clay loam; common medium faint brown (10YR 4/3) and few medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; neutral; gradual smooth boundary.

Cg—37 to 60 inches; grayish brown (10YR 5/2) silty clay loam; many medium distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; neutral.

The thickness of the solum ranges from 37 to 50 inches. The content of clay in the 10- to 40-inch control section ranges from 27 to 35 percent. The C or Cg horizon has chroma of 2 or 3.

Newhaven Series

The Newhaven series consists of somewhat poorly drained soils on terraces. These soils formed in loamy outwash. Permeability is moderate in the upper part of the profile and moderately rapid or rapid in the lower part. Slopes range from 0 to 2 percent.

Typical pedon of Newhaven loam, rarely flooded, 1,620 feet west and 1,680 feet south of the northeast corner of sec. 20, T. 6 S., R. 10 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; few fine roots; neutral; abrupt smooth boundary.

A—7 to 15 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; friable; few very fine roots; neutral; clear smooth boundary.

Bt1—15 to 22 inches; brown (10YR 4/3) loam; common fine faint dark grayish brown (10YR 4/2) and few fine prominent yellowish brown (10YR 5/8) mottles; weak fine prismatic structure parting to moderate fine subangular blocky; friable; few very fine roots; many distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; few pebbles; neutral; clear smooth boundary.

Bt2—22 to 30 inches; brown (10YR 4/3) clay loam; common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium prismatic structure; firm; few very fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; few pebbles; slightly acid; clear smooth boundary.

Bt3—30 to 40 inches; grayish brown (10YR 5/2) clay loam; many medium prominent strong brown (7.5YR 5/8) and common medium faint brown (10YR 5/3) mottles; moderate coarse prismatic structure; firm; few very fine roots; many distinct dark gray (10YR 4/1) clay films on faces of peds; few pebbles; medium acid; abrupt smooth boundary.

Bt4—40 to 47 inches; brown (10YR 4/3) sandy loam; few medium prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few distinct dark brown (10YR 3/3) clay films on faces of peds; medium acid; clear smooth boundary.

E&Bt—47 to 60 inches; yellowish brown (10YR 5/6) loamy sand (E) and dark brown (7.5YR 3/4) sandy loam (Bt); weak medium subangular blocky structure and very friable (E) and moderate medium subangular blocky structure and friable (Bt); few distinct dark brown (7.5YR 3/2) clay films on faces of peds (Bt); medium acid.

The solum is more than 60 inches thick. The thickness of the mollic epipedon ranges from 11 to 17 inches.

The Ap and A horizons have value of 2 or 3. The Bt horizon has value of 4 to 6 and chroma of 2 to 4. It is loam or clay loam in the upper part and loam or sandy loam in the lower part. In some pedons the E&Bt horizon extends to a depth of more than 70 inches. It is stratified sand or loamy sand that has bands of loamy sand or sandy loam.

Nolin Series

The Nolin series consists of well drained, moderately permeable soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Nolin silty clay loam, frequently flooded, 1,760 feet south and 400 feet west of the northeast corner of sec. 4, T. 5 S., R. 14 W.

Ap—0 to 9 inches; brown (10YR 4/3) silty clay loam, brown (10YR 5/3) dry; moderate very fine subangular blocky structure; friable; few very fine roots; neutral; abrupt smooth boundary.

Bt1—9 to 27 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; neutral; gradual smooth boundary.

Bt2—27 to 51 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak coarse subangular blocky structure; friable; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; neutral; gradual smooth boundary.

C—51 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; massive; friable; neutral.

The thickness of the solum ranges from 43 to 51 inches. The Ap horizon has chroma of 2 or 3. The Bt horizon has chroma of 3 or 4. It is silty clay loam or silt loam. The content of clay in the 10- to 40-inch control section ranges from 18 to 32 percent.

Parke Series

The Parke series consists of well drained, moderately permeable soils on uplands. These soils formed in loess

and in the underlying glacial outwash. Slopes range from 2 to 18 percent.

Typical pedon of Parke silt loam, 2 to 5 percent slopes, 1,240 feet east and 100 feet south of the northwest corner of sec. 20, T. 3 S., R. 9 E.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium platy structure parting to weak fine granular; friable; common very fine roots; slightly acid; abrupt smooth boundary.

Bt1—9 to 20 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and fine subangular blocky structure; friable; common very fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—20 to 29 inches; dark yellowish brown (10YR 4/4) silty clay loam; strong medium and coarse subangular blocky structure; friable; few very fine roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; few fine accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt3—29 to 38 inches; strong brown (7.5YR 4/6) silt loam; moderate coarse prismatic structure; friable; few very fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; common medium accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

2Bt4—38 to 54 inches; strong brown (7.5YR 4/6) silt loam that has a noticeable amount of sand; weak coarse prismatic structure; friable; few very fine roots; few distinct reddish brown (5YR 4/4) clay films on faces of peds; few coarse accumulations of iron and manganese oxide; strongly acid; gradual smooth boundary.

2Bt5—54 to 60 inches; strong brown (7.5YR 4/6) clay loam; weak coarse prismatic structure; firm; few very fine roots; common distinct reddish brown (5YR 4/4) clay films on faces of peds; common distinct light gray (10YR 7/1 dry) silt coatings on faces of peds and in pockets; few fine accumulations of iron and manganese oxide; few pebbles; strongly acid.

The solum is more than 60 inches thick. The loess is 29 to 38 inches deep over outwash.

The Ap horizon has value of 4 or 5 and chroma of 3 or 4. The Bt horizon has value of 4 or 5. The content of clay in the control section ranges from 25 to 35 percent. The 2Bt horizon has hue of 7.5YR or 5YR and value of 4 or 5. It is silt loam or silty clay loam in the upper part and clay loam or loam in the lower part.

Patton Series

The Patton series consists of poorly drained soils on lake plains. These soils formed in lacustrine sediments. Permeability is moderate in the upper part of the profile and moderately slow in the lower part. Slopes range from 0 to 2 percent.

Typical pedon of Patton silty clay loam, frequently flooded, 450 feet east and 500 feet north of the center of sec. 20, T. 3 S., R. 10 E.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; few very fine roots; few fine rounded accumulations of iron and manganese oxide; neutral; abrupt smooth boundary.

A—10 to 16 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; few fine distinct dark grayish brown (2.5Y 4/2) mottles; moderate fine subangular blocky structure; firm; few very fine roots; many distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine rounded accumulations of iron and manganese oxide; neutral; clear smooth boundary.

Btg1—16 to 22 inches; dark grayish brown (2.5Y 4/2) silty clay loam; few fine distinct olive brown (2.5Y 4/4) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; many distinct very dark gray (10YR 3/1) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; neutral; gradual smooth boundary.

Btg2—22 to 38 inches; grayish brown (2.5Y 5/2) silty clay loam; many medium prominent yellowish brown (10YR 5/4) mottles; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; few very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; neutral; gradual smooth boundary.

Btg3—38 to 48 inches; gray (10YR 5/1) silty clay loam; many medium prominent yellowish brown (10YR 5/6) and few medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few very fine roots; few distinct gray (10YR 5/1) clay films on faces of peds; mildly alkaline; clear smooth boundary.

Cg—48 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; many medium prominent brownish yellow (10YR 6/6) mottles; massive; friable; mildly alkaline.

The thickness of the solum ranges from 42 to 60 inches. The thickness of the mollic epipedon ranges from 10 to 16 inches.

The A horizon has value of 2 or 3 and chroma of 1 or 2. It commonly is silty clay loam but in some pedons is silt loam. The Btg horizon has hue of 10YR, 2.5Y, or 5Y. The content of clay in the control section ranges from 27 to 35 percent. The Cg horizon is silty clay loam or silt loam.

Petrolia Series

The Petrolia series consists of very poorly drained, moderately slowly permeable soils on flood plains. These soils formed in silty alluvium. Slopes are less than 2 percent.

Typical pedon of Petrolia silty clay loam, wet, 1,940 feet south and 20 feet east of the northwest corner of sec. 34, T. 4 S., R. 14 W.

A—0 to 6 inches; very dark grayish brown (2.5Y 3/2) silty clay loam, light brownish gray (2.5Y 6/2) dry; few fine prominent dark yellowish brown (10YR 3/4) mottles; moderate fine angular blocky structure; firm; common fine and medium roots; neutral; clear smooth boundary.

Cg1—6 to 20 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine prismatic structure; firm; few fine and medium roots; common distinct dark gray (N 4/0) clay films on faces of peds; neutral; gradual smooth boundary.

Cg2—20 to 40 inches; gray (10YR 5/1) silty clay loam; many medium distinct dark yellowish brown (10YR 3/4) mottles; weak medium prismatic structure; friable; few fine roots; few fine accumulations of iron and manganese oxide; neutral; gradual smooth boundary.

Cg3—40 to 60 inches; gray (10YR 5/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; few very fine roots; few fine accumulations of iron and manganese oxide; neutral.

The thickness of the solum corresponds to the thickness of the A horizon. The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. The Cg horizon has hue of 10YR to 5Y. It commonly is silty clay loam, but in some pedons it has strata of silt loam and coarser textures below a depth of 40 inches. The content of clay in the control section ranges from 27 to 35 percent.

Piopolis Series

The Piopolis series consists of poorly drained, moderately slowly permeable soils on flood plains. These soils formed in acid, silty alluvium. Slopes are less than 2 percent.

Typical pedon of Piopolis silty clay loam, frequently flooded, 1,510 feet west and 2,690 feet south of the northeast corner of sec. 32, T. 3 S., R. 8 E.

A—0 to 9 inches; dark grayish brown (10YR 4/2) silty clay loam, light brownish gray (10YR 6/2) dry; few fine prominent strong brown (7.5YR 4/6) mottles; moderate fine angular blocky structure; firm; common fine and very fine roots; few fine rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

Cg1—9 to 18 inches; light brownish gray (10YR 6/2) silty clay loam; many fine and medium distinct yellowish brown (10YR 5/6) mottles; massive; firm; few fine and medium roots; few fine rounded accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Cg2—18 to 60 inches; light gray (10YR 6/1) silty clay loam; few medium prominent yellowish brown (10YR 5/6) and common medium distinct light yellowish brown (10YR 6/4) mottles; massive; firm; few medium and coarse roots; very strongly acid.

The thickness of the solum corresponds to the thickness of the A horizon. The A horizon has hue of 10YR or 2.5Y. The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It commonly is silty clay loam, but in some pedons it has strata of silt loam below a depth of 40 inches. The content of clay in the control section ranges from 27 to 35 percent.

Racoon Series

The Racoon series consists of poorly drained soils on lake plains, terraces, and uplands. These soils formed in a mixture of loess and local silty alluvium. Permeability is moderately slow in the upper part of the profile and slow in the lower part. Slopes range from 0 to 2 percent.

Typical pedon of Racoon silt loam, 2,700 feet south and 90 feet east of the northwest corner of sec. 34, T. 3 S., R. 9 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; few fine roots; few fine and medium rounded accumulations of iron and manganese oxide; medium acid; abrupt smooth boundary.

Eg1—9 to 19 inches; gray (10YR 5/1) silt loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; moderate medium platy structure; friable; few fine roots; few distinct light brownish gray (10YR 6/2 dry) silt coatings on faces of peds; few fine and medium rounded accumulations of iron and

manganese oxide; strongly acid; clear smooth boundary.

Eg2—19 to 26 inches; light gray (10YR 6/1) silt loam; common fine prominent yellowish brown (10YR 5/6) and common fine distinct light yellowish brown (10YR 6/4) mottles; moderate medium platy structure; friable; few fine roots; few fine and medium rounded accumulations of iron and manganese oxide; very strongly acid; clear wavy boundary.

Btg1—26 to 37 inches; light gray (10YR 6/1) silty clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Btg2—37 to 55 inches; light gray (10YR 6/1) silty clay loam; common medium prominent strong brown (7.5YR 5/6) and common medium distinct light yellowish brown (10YR 6/4) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few distinct gray (10YR 5/1) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Btg3—55 to 60 inches; light gray (10YR 6/1) silty clay loam; many fine and medium prominent strong brown (7.5YR 5/6) and common fine prominent yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; friable; few distinct grayish brown (10YR 5/2) clay films on faces of peds; few medium and coarse rounded accumulations of iron and manganese oxide; very strongly acid.

The solum is more than 60 inches thick. The Ap horizon has value of 4 or 5 and chroma of 2 or 3. The E horizon has chroma of 1 or 2. The content of clay in the control section ranges from 27 to 35 percent.

Ridgway Series

The Ridgway series consists of well drained soils on terraces. These soils formed in loess and in the underlying outwash. Permeability is moderate in the upper part of the profile and rapid in the lower part. Slopes range from 0 to 10 percent.

Typical pedon of Ridgway silt loam, 0 to 2 percent slopes, rarely flooded, 900 feet west and 354 feet south of the northeast corner of sec. 1, T. 7 S., R. 10 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

BE—10 to 14 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; common distinct dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral; clear smooth boundary.

Bt1—14 to 22 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; neutral; gradual smooth boundary.

Bt2—22 to 30 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium and coarse subangular blocky structure; firm; few very fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; slightly acid; clear smooth boundary.

2Bt3—30 to 39 inches; yellowish brown (10YR 5/6) clay loam; weak coarse subangular blocky structure; friable; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; medium acid; clear smooth boundary.

2Bt4—39 to 49 inches; strong brown (7.5YR 4/6) sandy loam; weak coarse subangular blocky structure; very friable; few distinct brown (7.5YR 4/4) clay films on faces of peds; medium acid; gradual smooth boundary.

2E&Bt—49 to 60 inches; yellowish brown (10YR 5/6) loamy sand (E) that has lamellae of brown (7.5YR 4/4) sandy loam (Bt); single grain and loose (E) and massive and very friable (Bt); few distinct brown (7.5YR 4/4) clay bridges (Bt); medium acid.

The solum is more than 60 inches thick. The loess is 24 to 40 inches deep over outwash.

The Ap horizon has chroma of 2 or 3. Tillage has mixed the A and E horizons in most pedons. The E horizon, if it occurs, has chroma of 3 or 4. The content of clay in the control section ranges from 27 to 35 percent. The 2Bt horizon is clay loam, loam, or sandy loam. In some pedons the 2E&Bt horizon extends to a depth of more than 80 inches. It is stratified sand, loamy sand, or sandy loam. The heavier textures are in the lamellae.

Roby Series

The Roby series consists of somewhat poorly drained soils on terraces and lake plains. These soils formed in loamy and sandy outwash. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Slopes range from 0 to 2 percent.

Typical pedon of Roby fine sandy loam, rarely flooded, 1,160 feet east and 1,440 feet north of the southwest corner of sec. 10, T. 5 S., R. 10 E.

Ap—0 to 9 inches; brown (10YR 4/3) fine sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; few very fine roots; medium acid; abrupt smooth boundary.

E—9 to 13 inches; dark yellowish brown (10YR 4/4) fine sandy loam; few fine and medium distinct dark brown (7.5YR 3/4) and few fine faint brown (10YR 5/3) mottles; moderate medium platy structure; friable; few very fine roots; few fine rounded accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

Bt1—13 to 19 inches; yellowish brown (10YR 5/4) sandy loam; few fine faint pale brown (10YR 6/3) mottles; weak fine subangular blocky structure; friable; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; few prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; slightly acid; clear smooth boundary.

Bt2—19 to 27 inches; brown (10YR 5/3) sandy loam; many medium faint light brownish gray (10YR 6/2) and common medium prominent strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; few distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; slightly acid; gradual smooth boundary.

Bt3—27 to 35 inches; brown (10YR 5/3) sandy loam; many medium faint light brownish gray (10YR 6/2) and common medium prominent strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; few distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; slightly acid; gradual smooth boundary.

C1—35 to 54 inches; brown (7.5YR 4/4) loamy sand; few medium prominent light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) mottles; single grain; very friable; few very fine roots; common fine and medium irregular accumulations of iron and manganese oxide; neutral; clear smooth boundary.

C2—54 to 60 inches; strong brown (7.5YR 4/6) sand; few medium prominent grayish brown (10YR 5/2) mottles; single grain; loose; slightly acid.

The thickness of the solum ranges from 35 to 56 inches. The Ap and E horizons have value of 4 or 5. They are loamy sand or fine sandy loam. The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Some pedons have an E&Bt horizon below a depth of 40 inches.

Ruark Series

The Ruark series consists of poorly drained, moderately slowly permeable soils on terraces and lake plains. These soils formed in loamy outwash. Slopes range from 0 to 2 percent.

Typical pedon of Ruark loam, 1,820 feet west and 200 feet north of the southeast corner of sec. 20, T. 5 S., R. 10 E.

Ap—0 to 8 inches; brown (10YR 5/3) loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; few very fine roots; few medium rounded concretions of iron and manganese oxide; neutral; abrupt smooth boundary.

Eg—8 to 19 inches; light brownish gray (10YR 6/2) loam; common medium distinct yellowish brown (10YR 5/4) and few fine prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; friable; few very fine roots; few medium rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg1—19 to 30 inches; light brownish gray (10YR 6/2) clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to moderate fine angular blocky; firm; few very fine roots; many distinct light gray (10YR 6/1) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg2—30 to 37 inches; light gray (10YR 6/1) clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to weak medium angular blocky; firm; few very fine roots; common distinct gray (10YR 5/1) and light gray (10YR 6/1) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg3—37 to 49 inches; light brownish gray (10YR 6/2) clay loam; many medium faint light gray (10YR 6/1) and common fine prominent strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to weak coarse subangular blocky; firm; few very fine roots; many distinct gray (10YR 5/1) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; very strongly acid; gradual smooth boundary.

BCg—49 to 59 inches; light gray (10YR 6/1) loam; many coarse prominent strong brown (7.5YR 5/6)

mottles; weak coarse subangular blocky structure; firm; few very fine roots; few distinct gray (10YR 5/1) clay films in root channels; few fine and medium rounded concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.

Cg—59 to 65 inches; light gray (10YR 6/1) sandy loam; many coarse prominent strong brown (7.5YR 5/6) mottles; massive; friable; few very fine roots; few fine and medium rounded concretions of iron and manganese oxide; medium acid.

The thickness of the solum ranges from 35 to more than 60 inches. The Ap horizon has value of 4 or 5 and chroma of 1 to 3. It is sandy loam, loam, or clay loam. The E horizon has value of 5 to 7 and chroma of 1 or 2. It is loam or sandy loam. The Btg horizon has hue of 10YR or 2.5Y and value of 5 to 7. It commonly is clay loam, but the range includes silty clay loam, loam, and sandy clay loam. The Cg horizon is sandy loam, loam, or clay loam.

Sarpy Series

The Sarpy series consists of excessively drained, rapidly permeable soils on flood plains. These soils formed in sandy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Sarpy sandy loam, frequently flooded, 3,120 feet south and 1,820 feet east of the northwest corner of sec. 7, T. 7 S., R. 11 E.

Ap—0 to 8 inches; brown (10YR 4/3) sandy loam, brown (10YR 5/3) dry; weak fine granular structure; friable; slight effervescence; mildly alkaline; abrupt smooth boundary.

C—8 to 60 inches; pale brown (10YR 6/3), stratified sand and fine sand; single grain; loose; about 5 percent pebbles; strong effervescence; mildly alkaline.

The thickness of the solum corresponds to the thickness of the A horizon. The A horizon is sandy loam or loamy sand. The C horizon commonly is stratified fine sand, sand, or loamy sand, but in some pedons it has thin strata of loam or sandy loam.

Sciotoville Series

The Sciotoville series consists of moderately well drained soils on flood plains. These soils formed in acid, silty alluvium. Permeability is moderate in the upper part of the profile and slow in the lower part. Slopes range from 0 to 5 percent.

Typical pedon of Sciotoville silt loam, 0 to 2 percent slopes, rarely flooded, 760 feet north and 1,260 feet west of the southeast corner of sec. 15, T. 6 S., R. 9 E.

Ap—0 to 7 inches; brown (10YR 4/3 and 5/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.

E1—7 to 12 inches; brown (10YR 4/3) silt loam; many medium and coarse faint brown (10YR 5/3) mottles; moderate medium platy structure; friable; few fine roots; few fine accumulations of iron and manganese oxide; slightly acid; clear smooth boundary.

E2—12 to 21 inches; brown (10YR 5/3) silt loam; common fine distinct yellowish brown (10YR 5/6) mottles; moderate thick platy structure; friable; few fine roots; common distinct white (10YR 8/1 dry) silt coatings on faces of peds; common fine accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt—21 to 27 inches; pale brown (10YR 6/3) silt loam; few fine faint grayish brown (10YR 5/2) and common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; few distinct dark yellowish brown (10YR 4/4) clay films and white (10YR 8/1 dry) silt coatings on faces of peds; few fine accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

B/E—27 to 31 inches; silt loam that is pale brown (10YR 6/3) in the Bt part and white (10YR 8/1) in the E part; few fine distinct yellowish brown (10YR 5/6) and common fine faint grayish brown (10YR 5/2) mottles; moderate medium and fine subangular blocky structure; firm; few fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; few medium accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

B't—31 to 36 inches; pale brown (10YR 6/3) silty clay loam; many medium faint yellowish brown (10YR 5/4) and few fine faint grayish brown (10YR 5/2) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; very few distinct white (10YR 8/1 dry) silt coatings on faces of peds; few fine and medium accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btx—36 to 54 inches; brown (10YR 5/3) silty clay loam; many medium prominent strong brown (7.5YR 5/6) and few fine faint grayish brown (10YR 5/2) mottles; weak medium prismatic structure parting to weak coarse subangular blocky; firm and brittle; few fine

roots in cracks; many distinct brown (10YR 5/3) clay films on faces of peds; very few distinct white (10YR 8/1 dry) silt coatings on vertical faces of peds; few fine and medium accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

C—54 to 60 inches; pale brown (10YR 6/3) silt loam; many medium prominent strong brown (7.5YR 5/6) and common medium faint grayish brown (10YR 5/2) mottles; firm; common medium accumulations of iron and manganese oxide; strongly acid.

The thickness of the solum ranges from 54 to more than 60 inches. Depth to the Btx horizon ranges from 26 to 37 inches.

The Ap horizon has chroma of 2 or 3. The E horizon has chroma of 3 or 4. The Bt and B't horizons have value of 5 or 6 and chroma of 3 to 6. The content of clay in the control section ranges from 25 to 33 percent. The Btx horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6. It is silty clay loam or silt loam.

Sexton Series

The Sexton series consists of poorly drained, slowly permeable soils on terraces and lake plains. These soils formed in loess or silty material and in the underlying loamy outwash. Slopes range from 0 to 2 percent.

Typical pedon of Sexton silt loam, rarely flooded, 860 feet south and 740 feet east of the northwest corner of sec. 35, T. 6 S., R. 10 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak very fine granular structure; friable; common very fine roots; few fine rounded concretions of iron and manganese oxide; slightly acid; abrupt smooth boundary.

Btg1—10 to 17 inches; light brownish gray (10YR 6/2) silty clay loam; many fine and medium prominent strong brown (7.5YR 5/8) mottles; moderate fine subangular blocky structure; firm; few very fine roots; few distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Btg2—17 to 26 inches; light brownish gray (10YR 6/2) silty clay loam; common fine and medium prominent strong brown (7.5YR 5/8) mottles; moderate fine and medium subangular blocky structure; firm; few very fine roots; few distinct light gray (10YR 6/1) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; medium acid; gradual smooth boundary.

Btg3—26 to 37 inches; light gray (10YR 6/1) silty clay loam; common fine and medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few very fine roots; few distinct gray (10YR 5/1) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Btg4—37 to 55 inches; gray (N 5/0) silty clay loam; moderate coarse subangular blocky structure; firm; few very fine roots; few distinct dark gray (10YR 4/1) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; mildly alkaline; clear smooth boundary.

2Btg5—55 to 60 inches; gray (10YR 5/1) silty clay loam; common medium prominent strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; firm; common distinct dark gray (10YR 4/1) clay films on faces of peds; few distinct light gray (10YR 7/2 dry) silt coatings on faces of peds; few medium accumulations of iron and manganese oxide; mildly alkaline.

The thickness of the solum ranges from 55 to 70 inches. The loess or silty material is 45 to 55 inches deep over outwash.

The Ap horizon has value of 4 or 5. The Btg horizon has hue of 10YR or 2.5Y or is neutral in hue. It has chroma of 0 to 6. The upper part of this horizon ranges from 35 and 42 percent clay, and the lower part contains less clay and more sand. Some pedons have a Cg horizon within a depth of 60 inches. This horizon is stratified silt loam, silty clay loam, or loam.

Sharon Series

The Sharon series consists of moderately well drained, moderately permeable soils on flood plains. These soils formed in acid, silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Sharon silt loam, occasionally flooded, 2,400 feet north and 1,400 feet east of the southwest corner of sec. 11, T. 6 S., R. 8 E.

A—0 to 2 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; few very fine roots; slightly acid; abrupt smooth boundary.

C1—2 to 34 inches; yellowish brown (10YR 5/4) silt loam that has a few thin strata of dark yellowish brown (10YR 4/4) loam; massive; friable; few very fine roots; strongly acid; gradual smooth boundary.

C2—34 to 52 inches; brown (10YR 5/3) silt loam;

common fine faint grayish brown (10YR 5/2) mottles; massive; friable; few very fine roots; few fine rounded concretions of iron and manganese oxide; strongly acid; gradual smooth boundary.

C3—52 to 60 inches; light brownish gray (10YR 6/2) silt loam; many fine distinct yellowish brown (10YR 5/4) mottles; massive; friable; few very fine roots; common fine rounded concretions of iron and manganese oxide; strongly acid.

The thickness of the solum corresponds to the thickness of the A horizon. The A horizon has value of 4 or 5 and chroma of 3 or 4. The content of clay in the control section is less than 18 percent. The C horizon has value of 4 to 6 and chroma of 2 to 6. It is dominantly silt loam, but in some pedons it has thin layers of loam or sandy loam.

Skelton Series

The Skelton series consists of well drained soils on stream terraces and lake plains. These soils formed in loamy outwash. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Slopes range from 0 to 10 percent.

Typical pedon of Skelton fine sandy loam, 0 to 2 percent slopes, rarely flooded, 1,860 feet east and 120 feet south of the northwest corner of sec. 33, T. 6 S., R. 10 E.

Ap—0 to 10 inches; brown (10YR 4/3) fine sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common very fine and fine roots; neutral; abrupt smooth boundary.

Bt1—10 to 18 inches; strong brown (7.5YR 4/6) clay loam; moderate fine subangular blocky structure; friable; few very fine and fine roots; few distinct dark yellowish brown (10YR 3/4) and many distinct dark brown (7.5YR 3/4) clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—18 to 27 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; few very fine roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; few fine accumulations of iron and manganese oxide; medium acid; clear smooth boundary.

Bt3—27 to 37 inches; strong brown (7.5YR 5/6) clay loam; moderate coarse subangular blocky structure; friable; few very fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; few fine accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt4—37 to 54 inches; strong brown (7.5YR 5/6) sandy loam; moderate coarse subangular blocky structure; friable; many distinct strong brown (7.5YR 4/6) clay films on faces of peds; strongly acid; clear smooth boundary.

E&Bt—54 to 60 inches; yellowish brown (10YR 5/6) loamy sand (E) that has lamellae of dark yellowish brown (10YR 4/6) sandy loam (Bt); single grain and loose (E) and weak medium subangular blocky structure and very friable (Bt); slightly acid.

The thickness of the solum ranges from 50 to 70 inches. The Ap horizon generally is fine sandy loam or sandy loam but is loam or silt loam in some pedons. The Bt horizon has hue of 10YR or 7.5YR and chroma of 4 to 6. It is clay loam or loam in the upper part and sandy loam or loamy sand in the lower part. The content of clay in the control section ranges from 22 to 30 percent, and the content of sand averages more than 15 percent. Some pedons have a C horizon within a depth of 60 inches. This horizon is stratified sand, loamy sand, or sandy loam.

Springerton Series

The Springerton series consists of poorly drained, moderately permeable soils on terraces and lake plains. These soils formed in loamy outwash. Slopes range from 0 to 2 percent.

Typical pedon of Springerton loam, rarely flooded, 100 feet south and 2,500 feet west of the northeast corner of sec. 22, T. 4 S., R. 9 E.

Ap—0 to 9 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; friable; few very fine roots; neutral; abrupt smooth boundary.

A—9 to 15 inches; very dark gray (10YR 3/1) loam, gray (10YR 5/1) dry; moderate fine subangular blocky structure; friable; few very fine roots; neutral; clear smooth boundary.

AB—15 to 19 inches; very dark grayish brown (10YR 3/2) loam; many fine distinct dark grayish brown (2.5Y 4/2) mottles; moderate fine subangular blocky structure; friable; few very fine roots; few pebbles; neutral; clear smooth boundary.

Bg1—19 to 25 inches; dark grayish brown (2.5Y 4/2) loam; many fine distinct very dark grayish brown (10YR 3/2) and few fine prominent dark yellowish brown (10YR 4/4) mottles; moderate fine subangular blocky structure; friable; few very fine roots; few pebbles; neutral; gradual smooth boundary.

Bg2—25 to 35 inches; dark grayish brown (2.5Y 4/2) clay loam; many fine and medium prominent dark yellowish brown (10YR 4/4) mottles; friable; few very fine roots; few distinct dark gray (10YR 4/1)

clay films on faces of peds; neutral; clear smooth boundary.

Bg3—35 to 41 inches; light brownish gray (2.5Y 6/2) loam; many fine prominent yellowish brown (10YR 5/6) and few fine distinct gray (10YR 5/1) mottles; moderate fine subangular blocky structure; friable; few fine rounded accumulations of iron and manganese oxide; neutral; clear smooth boundary.

Bg4—41 to 45 inches; light brownish gray (2.5Y 6/2) loam; common medium prominent olive yellow (2.5Y 6/6) and many medium prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; neutral; gradual smooth boundary.

Cg—45 to 60 inches; grayish brown (2.5Y 5/2) loam that has strata of sandy loam; common medium distinct light olive brown (2.5Y 5/6) mottles; massive; friable; neutral.

The thickness of the solum ranges from 40 to 60 inches. The thickness of the mollic epipedon ranges from 11 to 20 inches.

The Ap and A horizons have value of 2 or 3 and chroma of 1 or 2. They are loam or clay loam. The Bg horizon has hue of 2.5Y or 5Y or is neutral in hue. It has value of 4 to 6 and chroma of 0 to 2. The Cg or C horizon has hue of 2.5Y or 10YR, value of 4 to 6, and chroma of 1 to 6. It is stratified, commonly with loam, sandy loam, or loamy sand. In some pedons it is calcareous within a depth of 60 inches.

Stonelick Series

The Stonelick series consists of well drained, moderately rapidly permeable soils on flood plains. These soils formed in sandy and loamy alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Stonelick loam, frequently flooded, 320 feet south and 1,100 feet west of the northeast corner of sec. 32, T. 5 S., R. 14 W.

Ap—0 to 9 inches; brown (10YR 4/3) loam, brown (10YR 5/3) dry; weak very fine subangular blocky structure; friable; few very fine roots; very slight effervescence; mildly alkaline; abrupt smooth boundary.

C1—9 to 16 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; very friable; few very fine roots; very slight effervescence; mildly alkaline; gradual smooth boundary.

C2—16 to 37 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; very friable; few very fine roots; slight effervescence; mildly alkaline; gradual smooth boundary.

C3—37 to 60 inches; dark yellowish brown (10YR 4/4), stratified sand, loamy sand, and sandy loam; massive; very friable; strong effervescence; mildly alkaline.

The thickness of the solum corresponds to the thickness of the A horizon. The Ap horizon has value of 4 or 5 and chroma of 3 or 4. It is loam or sandy loam. The C horizon commonly is stratified. It is loam, silt loam, sandy loam, sand, or loamy sand.

Stoy Series

The Stoy series consists of somewhat poorly drained, slowly permeable soils on uplands. These soils formed in loess. Slopes range from 0 to 5 percent.

Typical pedon of Stoy silt loam, 0 to 2 percent slopes, 2,400 feet north and 420 feet east of the southwest corner of sec. 36, T. 3 S., R. 10 E.

Ap—0 to 8 inches; brown (10YR 5/3) silt loam, light gray (10YR 7/2) dry; weak fine granular structure; friable; common very fine roots; few fine rounded concretions of iron and manganese oxide; slightly acid; abrupt smooth boundary.

E—8 to 12 inches; brown (10YR 5/3) silt loam; weak medium platy structure; friable; common very fine roots; few fine rounded concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

B/E—12 to 16 inches; pale brown (10YR 6/3) silty clay loam (B) and light gray (10YR 7/1) silt (E); few fine distinct yellowish brown (10YR 5/6) mottles; strong fine and medium subangular blocky structure; friable; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; very strongly acid; clear wavy boundary.

Bt—16 to 26 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct grayish brown (10YR 5/2) and common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure parting to weak medium subangular blocky; friable; few very fine roots; many distinct yellowish brown (10YR 5/4) clay films on faces of peds; few distinct light gray (10YR 7/1 dry) silt coatings on faces of peds; few fine rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btx—26 to 39 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) mottles; weak coarse prismatic structure; firm; few very fine roots; common distinct brown (10YR 5/3) and few distinct brown (10YR 4/3) clay films on faces of peds; few medium accumulations of iron

and manganese oxide; strongly acid; gradual smooth boundary.
C—39 to 60 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; massive; friable; few distinct brown (10YR 5/3) clay films in worm channels; few fine irregular accumulations of iron and manganese oxide; neutral.

The thickness of the solum ranges from 39 to 56 inches. Depth to the Btx horizon ranges from 21 to 30 inches.

The Ap horizon has value of 4 or 5. The E horizon has value of 5 or 6 and chroma of 3 or 4. The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. The content of clay in the control section ranges from 27 to 35 percent. The Btx horizon has colors similar to those of the Bt horizon. It is silty clay loam or silt loam.

Sylvan Series

The Sylvan series consists of well drained, moderately permeable soils on uplands. These soils formed in loess. Slopes range from 5 to 50 percent.

Typical pedon of Sylvan silt loam, 18 to 30 percent slopes, 360 feet east and 280 feet south of the northwest corner of sec. 31, T. 6 S., R. 10 E.

A—0 to 3 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; moderate very fine subangular blocky structure; friable; common very fine roots; neutral; clear wavy boundary.
E—3 to 8 inches; brown (10YR 4/3) silt loam; moderate fine subangular blocky structure; friable; few very fine roots; slightly acid; clear wavy boundary.
Bt1—8 to 12 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; friable; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; neutral; clear wavy boundary.
Bt2—12 to 25 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; neutral; clear wavy boundary.
BC—25 to 32 inches; yellowish brown (10YR 5/4) silt loam; weak coarse subangular blocky structure; friable; few very fine roots; very slight effervescence; neutral; clear wavy boundary.
C—32 to 60 inches; light brownish gray (10YR 6/2) silt loam; common fine and medium prominent yellowish brown (10YR 5/8) and common fine and medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; few medium rounded concretions of calcium carbonate; strong effervescence; mildly alkaline.

The solum generally is 20 to 40 inches thick but is as thin as 12 inches in some severely eroded areas. The depth to free carbonates ranges from 20 to 40 inches.

The A or Ap horizon commonly is silt loam but is silty clay loam in some severely eroded areas. It has value of 3 to 5 and chroma of 3 or 4. In some uneroded areas the A horizon is thin and has value of 3 or 4. Tillage has mixed the A and E horizons in most cultivated areas. The E horizon has value of 4 or 5. The content of clay in the control section ranges from 25 to 35 percent.

Uniontown Series

The Uniontown series consists of moderately well drained soils on lake plains and stream terraces. These soils formed in silty material. Permeability is moderate in the upper part of the profile and moderately slow in the lower part. Slopes range from 2 to 10 percent.

Typical pedon of Uniontown silt loam, 2 to 5 percent slopes, 670 feet north and 980 feet west of the southeast corner of sec. 18, T. 7 S., R. 10 E.

Ap—0 to 9 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate fine granular structure; friable; few very fine roots; few distinct light gray (10YR 7/2 dry) silt coatings in pockets; few fine rounded accumulations of iron and manganese oxide; neutral; abrupt smooth boundary.
E—9 to 13 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium platy structure parting to moderate very fine subangular blocky; friable; few very fine roots; many distinct light gray (10YR 7/2 dry) silt coatings in pockets; few fine rounded accumulations of iron and manganese oxide; neutral; clear smooth boundary.
Bt1—13 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; neutral; clear smooth boundary.
Bt2—21 to 28 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; neutral; clear smooth boundary.
BC—28 to 36 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct yellowish brown (10YR 5/8)

mottles; weak medium subangular blocky structure; friable; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; few fine rounded accumulations of iron and manganese oxide; neutral; clear smooth boundary.

C—36 to 60 inches; yellowish brown (10YR 5/6) silt loam; many medium distinct light yellowish brown (10YR 6/4) mottles; massive; friable; few very fine roots; few fine rounded accumulations of iron and manganese oxide; strong effervescence; mildly alkaline.

The thickness of the solum ranges from 20 to 40 inches. The depth to free carbonates ranges from 35 to more than 60 inches.

The Ap horizon has value of 4 or 5 and chroma of 3 to 6. Tillage has mixed the A and E horizons in most eroded areas. The E horizon has chroma of 3 or 4. The Bt horizon has hue of 10YR or 2.5Y and chroma of 4 to 6. The C horizon commonly is silt loam or silt, but in some pedons it has strata of loam to loamy sand.

Wakeland Series

The Wakeland series consists of somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 2 percent.

Typical pedon of Wakeland silt loam, frequently flooded, 1,050 feet east and 210 feet north of the southwest corner of sec. 17, T. 7 S., R. 9 E.

Ap—0 to 10 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak fine granular structure; friable; few very fine roots; medium acid; abrupt smooth boundary.

C—10 to 16 inches; brown (10YR 5/3) silt loam; many medium faint light brownish gray (10YR 6/2) mottles; massive; friable; common prominent white (10YR 8/1 dry) pockets of silt; few fine accumulations of iron and manganese oxide; neutral; clear smooth boundary.

Cg1—16 to 34 inches; light brownish gray (10YR 6/2) silt loam; many medium distinct light brownish gray (2.5Y 6/2) and few medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; many prominent white (10YR 8/2 dry) bands and pockets of silt; many fine accumulations of iron and manganese oxide; neutral; gradual smooth boundary.

Cg2—34 to 60 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; common prominent white (10YR 8/2 dry) pockets of silt; few fine accumulations of iron and manganese oxide; neutral.

The Ap horizon has value of 4 or 5 and chroma of 3 or 4. The C horizon has value of 4 to 6 and chroma of 1 to 4. In some pedons thin strata of loam or sandy loam are below a depth of 40 inches.

Weir Series

The Weir series consists of poorly drained, very slowly permeable soils on uplands. These soils formed in loess. Slopes range from 0 to 2 percent.

Typical pedon of Weir silt loam, 2,140 feet west and 2,060 feet north of the southeast corner of sec. 35, T. 3 S., R. 10 E.

Ap—0 to 10 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; many fine prominent brown (7.5YR 4/4) mottles; moderate very fine subangular blocky structure; friable; many very fine roots; few fine and medium rounded concretions of iron and manganese oxide; neutral; abrupt smooth boundary.

Eg—10 to 20 inches; light gray (10YR 7/2) silt loam; many fine and medium distinct yellowish brown (10YR 5/4) and few fine distinct yellowish brown (10YR 5/6) mottles; weak thin platy structure; friable; few very fine roots; few fine and medium rounded concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Btg1—20 to 25 inches; light brownish gray (10YR 6/2) silty clay loam; common fine and medium distinct yellowish brown (10YR 5/6) and few fine distinct yellowish brown (10YR 5/4) mottles; moderate fine subangular blocky structure; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg2—25 to 34 inches; light brownish gray (10YR 6/2) silty clay loam; many fine and medium distinct yellowish brown (10YR 5/6), many fine and medium prominent yellowish brown (10YR 5/8), and few medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg3—34 to 44 inches; light brownish gray (10YR 6/2) silty clay loam; many medium and coarse distinct yellowish brown (10YR 5/6), many medium and coarse prominent yellowish brown (10YR 5/8), and common medium distinct yellowish brown (10YR

5/4) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; very strongly acid; gradual smooth boundary.

Btg4—44 to 60 inches; grayish brown (10YR 5/2) silty clay loam; many fine and medium distinct yellowish brown (10YR 5/6) and many fine and medium prominent yellowish brown (10YR 5/8) mottles; weak coarse subangular blocky structure; firm; few very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; medium acid.

The solum is more than 60 inches thick. The content of clay in the control section ranges from 35 to 40 percent.

The Ap horizon has value of 4 or 5. The Eg horizon has value of 5 to 7. The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It generally is silty clay loam, but the range includes silty clay.

Wellston Series

The Wellston series consists of well drained, moderately permeable soils on uplands. These soils formed in loess and in the underlying bedrock residuum. Slopes range from 18 to 30 percent.

Typical pedon of Wellston silt loam, 18 to 30 percent slopes, 1,500 feet west and 2,200 feet south of the northeast corner of sec. 23, T. 6 S., R. 8 E.

A—0 to 4 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate very fine subangular blocky structure; friable; many fine and very fine roots; slightly acid; clear smooth boundary.

E—4 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium platy structure; friable; many medium and fine roots; very strongly acid; clear smooth boundary.

BE—9 to 15 inches; brown (7.5YR 5/4) silt loam; weak fine subangular blocky structure; friable; common medium roots; very few faint brown (7.5YR 4/4) coatings on faces of peds; very strongly acid; gradual smooth boundary.

Bt1—15 to 27 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few medium and fine roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; very strongly acid; clear smooth boundary.

2Bt2—27 to 32 inches; strong brown (7.5YR 5/6) loam; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; few medium and fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; about 10 percent rock fragments; few mica flakes throughout the horizon; strongly acid; clear wavy boundary.

2Bt3—32 to 40 inches; strong brown (7.5YR 4/6) channery loam; common medium prominent brown (10YR 5/3) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few fine roots; few distinct brown (7.5YR 4/4) clay films on faces of peds; about 15 percent rock fragments; few mica flakes throughout the horizon; very strongly acid; clear wavy boundary.

2Cr—40 to 47 inches; brown (7.5YR 4/4) very channery loam; common medium prominent grayish brown (10YR 5/2) mottles; massive; friable; few fine roots; about 70 percent rock fragments; common mica flakes throughout the horizon; very strongly acid.

2R—47 inches; fractured sandstone bedrock.

The thickness of the solum ranges from 35 to 55 inches. The depth to bedrock ranges from 40 to 72 inches.

The A horizon has chroma of 2 or 3. The E horizon has value of 4 or 5 and chroma of 3 or 4. The Bt and 2Bt horizons have hue of 7.5YR or 10YR. The Bt horizon is silt loam or silty clay loam. The 2Bt horizon is loam, silt loam, or the channery analogs of those textures. The 2Cr horizon is very channery or extremely channery loam or silt loam.

Wynoose Series

The Wynoose series consists of poorly drained, very slowly permeable soils on uplands. These soils formed in loess and in the underlying silty material, which contains more sand than the loess. Slopes range from 0 to 2 percent.

Typical pedon of Wynoose silt loam, 1,280 feet west and 2,000 feet south of the northeast corner of sec. 20, T. 6 S., R. 8 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; few fine prominent strong brown (7.5YR 4/6) mottles; moderate fine granular structure; friable; few very fine roots; few fine rounded accumulations of iron and manganese oxide; slightly acid; abrupt smooth boundary.

Eg1—8 to 18 inches; light brownish gray (10YR 6/2) silt loam; common medium faint brown (10YR 5/3) and few fine prominent strong brown (7.5YR 4/6) mottles; moderate medium platy structure; friable; few very fine roots; few fine and medium rounded

accumulations of iron and manganese oxide; very strongly acid; clear smooth boundary.

Eg2—18 to 23 inches; grayish brown (10YR 5/2) silt loam; common fine and medium prominent strong brown (7.5YR 5/6) and few fine prominent yellowish brown (10YR 5/8) mottles; weak thick platy structure; friable; few very fine roots; many prominent white (10YR 8/1 dry) silt coatings on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; very strongly acid; abrupt wavy boundary.

Btg1—23 to 39 inches; light brownish gray (10YR 6/2) silty clay; many medium prominent strong brown (7.5YR 5/6) mottles; strong medium prismatic structure parting to strong medium angular blocky; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct gray (10YR 5/1) clay films in root channels; few fine and medium rounded accumulations of iron and manganese oxide; strongly acid; clear smooth boundary.

Btg2—39 to 51 inches; grayish brown (2.5Y 5/2) silty clay loam; many medium and coarse prominent strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine and medium rounded accumulations of iron and manganese oxide; few fine and medium irregular barite crystals; few pebbles; strongly acid; gradual smooth boundary.

2Btg3—51 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; many medium and coarse prominent strong brown (7.5YR 5/6) mottles; weak medium prismatic structure; firm; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium rounded accumulations of iron and manganese oxide; few fine and medium irregular barite crystals; few pebbles; medium acid.

The thickness of the solum ranges from 45 to more than 60 inches. The Ap horizon has chroma of 2 or 3. The Eg horizon has value of 4 to 6. The Btg horizon has value of 4 to 6 and chroma of 1 or 2. The content of clay in the control section ranges from 35 to 42 percent. The 2Btg horizon has colors similar to those of the Btg horizon but contains more sand.

Zanesville Series

The Zanesville series consists of moderately well drained, slowly permeable soils on uplands. These soils formed in loess and in the underlying bedrock residuum. Slopes range from 5 to 18 percent.

Typical pedon of Zanesville silt loam, 5 to 10 percent slopes, eroded, 1,980 feet east and 2,300 feet south of the northwest corner of sec. 8, T. 4 S., R. 8 E.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; mixed with yellowish brown (10YR 5/4) subsoil material in the lower part; moderate medium granular structure; friable; many very fine roots; neutral; clear smooth boundary.

BE—6 to 12 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; friable; common very fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt—12 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; very strongly acid; clear smooth boundary.

B/E—22 to 25 inches; yellowish brown (10YR 5/4) silty clay loam (Bt) and white (10YR 8/2) silt (E); moderate medium subangular blocky structure; firm; few very fine roots in cracks; very strongly acid; abrupt smooth boundary.

Btx1—25 to 33 inches; strong brown (7.5YR 4/6) silty clay loam; few medium prominent brown (10YR 5/3) mottles; weak fine prismatic structure parting to moderate medium platy in the lower part of the horizon; firm and brittle; few very fine roots in cracks; many distinct brown (10YR 4/3) clay films on faces of peds; few distinct white (10YR 8/2 dry) silt coatings on vertical faces of peds; very strongly acid; gradual smooth boundary.

Btx2—33 to 50 inches; dark yellowish brown (10YR 4/6) silt loam; few medium distinct pale brown (10YR 6/3) mottles; weak medium prismatic structure parting to moderate medium platy; firm and brittle; very few very fine roots in cracks; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct white (10YR 8/2 dry) silt coatings in cracks; few fine accumulations of iron and manganese oxide; very strongly acid; gradual smooth boundary.

2Bx—50 to 74 inches; strong brown (7.5YR 5/6) silt loam that has a noticeable amount of sand and mica flakes; few medium prominent pale brown (10YR 6/3) mottles; weak coarse prismatic structure; firm; few fine accumulations of iron and manganese oxide; few sandstone pebbles; very strongly acid; abrupt smooth boundary.

3R—74 inches; fractured sandstone bedrock.

The thickness of the solum and the depth to bedrock range from 40 to 80 inches. Depth to the Btx horizon ranges from 20 to 30 inches.

The Ap horizon has value of 4 or 5. The Bt horizon

has chroma of 4 to 6. It is silt loam or silty clay loam. The content of clay in the control section ranges from 25 to 33 percent. The Btx horizon has value of 4 or 5 and chroma of 4 to 6.

Zipp Series

The Zipp series consists of very poorly drained, slowly permeable soils on lake plains. These soils formed in fine textured lacustrine sediments. Slopes are less than 2 percent.

Typical pedon of Zipp silty clay, rarely flooded, 2,600 feet north and 200 feet west of the southeast corner of sec. 35, T. 4 S., R. 8 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silty clay, grayish brown (10YR 5/2) dry; moderate very fine subangular blocky structure; a plowpan at a depth of 3 to 8 inches; firm; common fine roots; few fine rounded concretions of iron and manganese oxide; neutral; abrupt smooth boundary.

Bg1—8 to 15 inches; light gray (N 6/0) silty clay; common medium prominent strong brown (7.5YR 5/8) and few fine prominent strong brown (7.5YR 4/6) mottles; moderate fine prismatic structure parting to moderate fine angular blocky; firm; few very fine roots; common distinct light gray (N 6/0) pressure faces on peds; few fine rounded concretions of iron and manganese oxide; neutral; gradual smooth boundary.

Bg2—15 to 30 inches; gray (5Y 5/1) silty clay; many medium prominent strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium angular blocky; firm; few very fine roots; common distinct gray (5Y 5/1) pressure faces on peds; few fine rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

Bg3—30 to 48 inches; gray (5Y 5/1) silty clay; common fine prominent yellowish brown (10YR 5/6) mottles; weak fine prismatic structure parting to moderate fine angular blocky; firm; few very fine roots; common distinct gray (5Y 5/1) pressure faces on peds; few fine rounded concretions of iron and manganese oxide; neutral; gradual smooth boundary.

Cg—48 to 60 inches; light gray (5Y 6/1) silty clay; common medium prominent yellowish brown (10YR 5/8) mottles; massive; firm; few fine rounded concretions of iron and manganese oxide; mildly alkaline.

The thickness of the solum ranges from 40 to more than 60 inches. The depth to free carbonates ranges from 53 to more than 60 inches.

The Ap horizon has hue of 10YR or 2.5Y. It is silty clay, silty clay loam, or silt loam. The Bg horizon has hue of 10YR, 2.5Y, or 5Y or is neutral in hue. It has value of 4 to 6 and chroma of 0 to 2. It is silty clay or silty clay loam. The content of clay in the control section ranges from 35 to 55 percent. The Cg horizon has colors and textures similar to those of the Bg horizon.

Formation of the Soils

Soils are the result of interactions among soil-forming processes. The characteristics of a soil at any given point are determined by the physical and mineralogical composition of the parent material; the plant and animal life on and in the soil; the relief, or lay of the land; the length of time that the forces of soil formation have acted on the soil material; and the climate under which the soil material accumulated and has existed since accumulation.

Climate and plant and animal life are active factors of soil formation. Over time, they act on the parent material that has accumulated through the weathering of rocks and slowly change the material into 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 a few cases determines it almost entirely. Time is needed for the transformation of the parent material into a soil.

The five factors of soil formation are closely interrelated. The effects of any one factor can be described only as they relate to the effects of the other factors.

Parent Material

Parent material is the unconsolidated geologic material in which a soil forms. It determines the textural, chemical, and mineralogical composition of the soil. The properties of the parent material vary greatly within small distances, depending on the source of the material. The major kinds of parent material in White County are loess, lacustrine deposits, outwash, alluvium, glacial till, sandstone residuum, and organic deposits.

Loess, or silty wind-deposited material, is the most extensive parent material in White County. It blankets many of the other kinds of parent material in the county. The loess is about 200 inches thick in the south-central part of the county and 45 inches thick in the western part *(3)*. Most areas have two layers of loess. The upper layer is Peoria loess, which is gray and yellowish brown silt loam when it is unweathered. The lower layer is Roxana loess, which generally is thinner and contains more sand than Peoria loess. Roxana loess was weathered before it was covered by Peoria loess. It has more influence on the modern soils in areas where it is closer to the surface and the layer of Peoria loess is thinner. Ava and Bluford are examples of soils that formed in both kinds of loess. Alford and Hosmer are examples of soils that formed entirely in Peoria loess.

Lacustrine material was deposited from still or slowly moving water. It is clayey or silty, depending on the speed of the water at the time of deposition. This material was deposited in glacial lakes 21,000 to 13,000 years ago *(5)*. The lake plains of former Lake Little Wabash, Lake Skillet, and Lake Saline cover large areas of the county. These lakes formed when Wisconsin glacial outwash carried down the valleys of the Wabash and Ohio Rivers dammed old valleys. The height of the dams varied, and the lakes were filled during several episodes. The lacustrine deposits are part of the Equality Formation. Patton and Zipp soils formed in this material. Some of the upper tributaries of the lake plains have been covered by more recent overwash. The rarely flooded overwash phases of Patton and Zipp soils formed in the overwash and in the underlying lacustrine sediments.

Outwash material was deposited by glacial meltwater. It consists of strata made up of material of different particle sizes. The sorting of individual layers of the material is related to the stream velocity at the time of deposition. The coarser textured material was deposited as the water slowed down. The finer textured material was deposited in much more slowly moving or standing water. Outwash is extensive in the eastern part of the county, between the Little Wabash and Wabash Rivers. Dickinson and Ruark are examples of soils that formed entirely in outwash. Ridgway and Sexton are examples of soils that formed in loess and in the underlying stratified outwash. In some areas, the outwash has been reworked by the wind and sand dunes have formed. Bloomfield soils are an example of soils that formed in these eolian deposits.

Alluvial material was recently deposited by floodwater from streams and rivers. Its texture is determined by the velocity of the water that deposited the material. Alluvium is on the bottom land along Bear Creek, Grindstone Creek, and other streams in the county. It is mostly silt loam and some silty clay loam. Belknap and Bonnie are examples of soils that formed in alluvium.

The bottom land along the Wabash River has the largest areas of alluvial soils in the county. The alluvium on this bottom land is less uniform than that along other streams in the county. It is on a series of ridges and swales. The alluvium on the ridges is commonly loamy or silty. Landes and Armiesburg are examples of soils on the ridges. The alluvium in the swales is commonly silty. Newark soils are an example of soils in the swales. Several old river channels or slack-water sloughs are on the bottom land. The alluvium in the sloughs generally is silty. Petrolia soils are an example of soils in the sloughs.

Glacial till is material that was deposited directly by glaciers with a minimum of water action. It consists of mixed particles of different sizes. In White County it is generally silt loam or loam. In places it consists largely of sandstone fragments moved only a short distance by the glacier. The small pebbles in this parent material have sharp corners, indicating that they have not been worn by water. The southern limit of the Illinoian glacier is a few miles south of White County. Therefore, the glacial till in the county is thin and discontinuous. Most areas of glacial till have subsequently been covered by deposits of other kinds of parent material. Hickory soils formed in glacial till.

Many of the prominent oval and oblong ridges in the northern part of the county have cores consisting of Hagarstown drift. This material was deposited and reworked by glacial meltwater in crevices of the ice sheet. It is loamy and sandy and has reddish colors throughout. Negley soils formed in Hagarstown drift, and Parke soils formed in loess and in the underlying Hagarstown drift.

Some soils formed in material that weathered from sedimentary bedrock. This rock consists of sandstone, siltstone, and shale. Most of these soils are on steep side slopes. Berks soils formed in this material. Wellston soils formed in this material and in the overlying loess.

Organic material is made up of plant remains. Shallow lakes formed in sloughs left by the rivers. Water-tolerant plants, grasses, and sedges grow around these lakes. As these plants died, their remains became part of the organic accumulation. When the lakes eventually were filled with organic material, areas of muck formed. Houghton soils formed in organic material.

Plant and Animal Life

Soils are affected by the vegetation under which they form. The native vegetation in White County was deciduous hardwood trees, marsh grasses, and prairie grasses. Soils are commonly grouped as either forest soils or prairie soils. Forest soils have a thin, relatively light colored surface layer. The organic matter in the surface layer is derived mainly from the decomposition of leaf litter. Alford and Bluford soils formed under forest vegetation. Prairie soils have a thick, dark surface layer. Grasses have many fine, fibrous roots. The roots add large amounts of organic matter to the soil when the grasses die and decompose. Meadowbank and Patton soils formed under grasses.

Other living organisms have influenced soil formation in White County. These include bacteria, fungi, other micro-organisms, earthworms, insects, and burrowing animals. They help to decompose the organic material and mix and churn the soil.

Human activities also affect the formation of soils. In some areas of the county, farming has reduced the amount of organic matter in the surface soil and resulted in increased runoff and erosion. Dikes and levees reduce the frequency of flooding on some soils. The water table in some soils has been lowered by subsurface drains. The future formation of some soils could be greatly affected by human activities.

Relief

Variations in the slope of the land surface greatly influence the runoff rate, the rate of water infiltration, the extent of erosion, and the natural drainage of the soil.

A comparison between soils that formed in similar kinds of parent material but in areas of different topography and, therefore, under different drainage conditions shows the effect of slope on soil formation. Ava and Wynoose soils formed in similar kinds of parent material. Ava soils are gently sloping to strongly sloping, are moderately well drained, and have a brownish subsoil. Wynoose soils are nearly level and poorly drained and have a grayish subsoil. The difference in the color of the subsoil is affected by the degree of oxidation of certain mineral compounds, chiefly iron. In Wynoose and other nearly level or depressional soils, the water table is close to the surface nearly all year. The water in the pores restricts the circulation of air. Under these conditions, the iron is poorly oxidized and is gray. The water table is lower in the more sloping Ava soils, and some of the rainfall runs off the surface. As a result, these soils are drier and have more air in their pores. The iron in the subsoil

is better oxidized and is brown.

Relief determines the runoff rate and the susceptibility to erosion, both of which generally increase as the slope increases. In some areas erosion occurs so rapidly that the surface soil is removed as soon as a soil forms. The soils in these areas have weakly expressed horizons and generally are shallow to the underlying unweathered parent material. Sylvan soils are an example.

Time

Time greatly affects the degree of profile development in a soil. The influence of time can be modified by erosion, parent material, topography, and the deposition of material. Changes take place slowly in most kinds of parent material. The age of soils is determined by the degree of profile development. Soils that are characterized by little or no development are considered immature. Soils having well expressed horizons are considered mature even if the age of the parent material in which they formed is the same as that of the parent material in which an immature soil formed.

On some of the steeper slopes in the county, erosion removes surface soil material as the soil forms. The soils on these slopes are immature even though the slopes have been exposed to weathering for thousands of years. Sylvan soils are an example.

The soils on flood plains accumulate new material during periods of flooding. This repeated deposition retards soil formation. As a result, the soils have only very weakly expressed horizons. Belknap soils are an example.

Variations in the kind of parent material can cause differences between soils that have been exposed to weathering for the same amount of time. For example, Markland soils, which formed in clayey lacustrine deposits, have less distinct horizons and are shallower to carbonates than Alford soils, which formed in loess. These differences are caused by a slower rate of water percolation through the clayey Markland soils.

Climate

White County has a temperate, humid, continental climate. Because it is essentially uniform throughout the county, climate has not caused any obvious differences among the soils within the county. It has differentiated those soils from the soils in other regions.

Climate affects soil formation through its effect on weathering, plant and animal life, and erosion. Temperature and precipitation affect the physical and chemical nature of the soil. The rate at which minerals in the soil weather increases as the temperature increases. As water from precipitation moves through the soil, soluble salts are dissolved and transported downward. The water also transports clay-size particles downward in the soil. A clay-enriched subsoil is the result of this translocation of clay. Precipitation can affect soil formation by removing soil at the surface. As the rate of erosion approaches the rate of soil formation, the soil generally exhibits less profile development.

Climate also affects soil formation indirectly through its effect on the vegetation on the soil. The temperature and precipitation in the county favor the growth of both forest and prairie vegetation.

Additional information about the climate is available under the heading "General Nature of the County."

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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 illuvial 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.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

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

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on the contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

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

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

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.

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 (flagstone) 15 to 38 centimeters (6 to 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, 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.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

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.

Foot slope. 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.

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.

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 50 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 soil 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).

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

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.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

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 downward 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
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly 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 underlying material. 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.

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.

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.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally silty or clayey, is slippery when wet, and is low in productivity.

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.

Slow intake (in tables). The slow movement of water into 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 underlying material. 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 soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing 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.

Subsurface layer. Any surface soil horizon (A, E, AB,

or EB) below the surface layer.

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.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

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.

Underlying material. The part of the soil below the solum.

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.

Varve. A sedimentary layer of a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

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 1961-90 at Fairfield, Illinois)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	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	38.0	20.3	29.2	67	-12	5	2.31	0.98	3.43	4	5.4
February	42.9	24.1	33.5	72	-6	11	2.73	1.39	3.91	5	4.2
March	54.9	34.6	44.8	81	9	74	4.78	2.79	6.55	8	2.3
April	66.7	44.1	55.4	86	24	215	4.51	2.62	6.19	8	.4
May	76.3	53.1	64.7	91	33	456	4.92	2.82	6.79	7	.0
June	85.0	61.6	73.3	96	44	698	3.93	2.27	5.41	6	.0
July	88.2	65.5	76.9	99	50	831	4.16	2.30	5.81	6	.0
August	86.4	63.2	74.8	99	48	767	3.25	1.77	4.55	5	.0
September	80.5	56.6	68.5	95	35	556	3.12	1.57	4.47	5	.0
October	68.9	45.0	57.0	88	24	246	3.42	1.78	4.85	5	.0
November	55.0	36.1	45.5	77	13	67	4.07	2.26	5.66	6	.7
December	42.3	25.6	33.9	67	-3	12	3.79	1.91	5.43	6	2.9
Yearly:											
Average	65.4	44.2	54.8	---	---	---	---	---	---	---	---
Extreme	---	---	---	100	-14	---	---	---	---	---	---
Total	---	---	---	---	---	3,938	44.99	38.10	51.12	71	15.9

* 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 (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1961-90 at Fairfield, 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. 9	Apr. 15	May 2
2 years in 10 later than--	Apr. 4	Apr. 10	Apr. 26
5 years in 10 later than--	Mar. 24	Apr. 1	Apr. 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 25	Oct. 14	Sept. 28
2 years in 10 earlier than--	Oct. 30	Oct. 19	Oct. 3
5 years in 10 earlier than--	Nov. 9	Oct. 28	Oct. 13

TABLE 3.--GROWING SEASON

(Recorded in the period 1961-90 at Fairfield, 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	192	185	156
8 years in 10	199	191	164
5 years in 10	213	201	178
2 years in 10	226	212	192
1 year in 10	233	217	199

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

Map symbol	Soil name	Acres	Percent
2	Cisne silt loam	760	0.2
3A	Hoyleton silt loam, 0 to 2 percent slopes	370	0.1
3B	Hoyleton silt loam, 2 to 5 percent slopes	2,010	0.6
8D2	Hickory loam, 10 to 18 percent slopes, eroded	2,010	0.6
8F	Hickory loam, 18 to 30 percent slopes	2,050	0.6
8G	Hickory loam, 30 to 50 percent slopes	1,120	0.3
12	Wynoose silt loam	800	0.2
13A	Bluford silt loam, 0 to 2 percent slopes	5,410	1.7
13B	Bluford silt loam, 2 to 5 percent slopes	5,160	1.6
13B2	Bluford silt loam, 2 to 5 percent slopes, eroded	1,370	0.4
14B	Ava silt loam, 2 to 5 percent slopes	15,350	4.8
14B2	Ava silt loam, 2 to 5 percent slopes, eroded	7,670	2.4
14C2	Ava silt loam, 5 to 10 percent slopes, eroded	13,030	4.1
14C3	Ava silty clay loam, 5 to 10 percent slopes, severely eroded	9,330	2.9
15B	Parke silt loam, 2 to 5 percent slopes	370	0.1
15C2	Parke silt loam, 5 to 10 percent slopes, eroded	620	0.2
15D2	Parke silt loam, 10 to 18 percent slopes, eroded	240	0.1
19C3	Sylvan silty clay loam, 5 to 10 percent slopes, severely eroded	300	0.1
19D3	Sylvan silty clay loam, 10 to 18 percent slopes, severely eroded	270	0.1
19F	Sylvan silt loam, 18 to 30 percent slopes	910	0.3
53B	Bloomfield fine sand, 1 to 5 percent slopes	1,630	0.5
53C	Bloomfield fine sand, 5 to 10 percent slopes	1,110	0.3
53D	Bloomfield fine sand, 10 to 18 percent slopes	410	0.1
75B	Drury silt loam, 2 to 5 percent slopes	110	*
87A	Dickinson fine sandy loam, 0 to 2 percent slopes	990	0.3
87B	Dickinson fine sandy loam, 2 to 5 percent slopes	290	0.1
109	Racoon silt loam	1,520	0.5
131A	Alvin fine sandy loam, 0 to 2 percent slopes	1,360	0.4
131B	Alvin fine sandy loam, 2 to 5 percent slopes	2,000	0.6
131C	Alvin fine sandy loam, 5 to 10 percent slopes	1,140	0.4
131F	Alvin fine sandy loam, 18 to 30 percent slopes	390	0.1
142	Patton silty clay loam	5,800	1.8
142+	Patton silt loam, overwash	1,620	0.5
164A	Stoy silt loam, 0 to 2 percent slopes	890	0.3
164B	Stoy silt loam, 2 to 5 percent slopes	1,290	0.4
165	Weir silt loam	150	*
173A	McGary silt loam, 0 to 2 percent slopes	1,630	0.5
173B2	McGary silt loam, 2 to 5 percent slopes, eroded	330	0.1
176	Marissa silt loam	910	0.3
178	Ruark loam	3,570	1.1
184	Roby fine sandy loam	670	0.2
208	Sexton silt loam	620	0.2
214B	Hosmer silt loam, 2 to 5 percent slopes	3,680	1.1
214B2	Hosmer silt loam, 2 to 5 percent slopes, eroded	2,970	0.9
214C2	Hosmer silt loam, 5 to 10 percent slopes, eroded	3,070	1.0
214C3	Hosmer silty clay loam, 5 to 10 percent slopes, severely eroded	2,930	0.9
231	Evansville silt loam	120	*
301B	Grantsburg silt loam, 2 to 5 percent slopes	1,100	0.3
308B	Alford silt loam, 2 to 5 percent slopes	3,150	1.0
308B2	Alford silt loam, 2 to 5 percent slopes, eroded	1,120	0.3
308C2	Alford silt loam, 5 to 10 percent slopes, eroded	2,960	0.9
308C3	Alford silty clay loam, 5 to 10 percent slopes, severely eroded	2,270	0.7
308D2	Alford silt loam, 10 to 18 percent slopes, eroded	490	0.2
308D3	Alford silty clay loam, 10 to 18 percent slopes, severely eroded	870	0.3
337	Creal silt loam	4,730	1.5
339F	Wellston silt loam, 18 to 30 percent slopes	650	0.2
340C2	Zanesville silt loam, 5 to 10 percent slopes, eroded	1,680	0.5
340C3	Zanesville silt loam, 5 to 10 percent slopes, severely eroded	290	0.1
340D2	Zanesville silt loam, 10 to 18 percent slopes, eroded	1,820	0.6
340D3	Zanesville silt loam, 10 to 18 percent slopes, severely eroded	590	0.2
434A	Ridgway silt loam, 0 to 2 percent slopes	1,600	0.5
434B	Ridgway silt loam, 2 to 5 percent slopes	1,660	0.5

See footnote at end of table.

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

Map symbol	Soil name	Acres	Percent
434C2	Ridgway silt loam, 5 to 10 percent slopes, eroded	630	0.2
436A	Meadowbank silt loam, 0 to 2 percent slopes	1,770	0.6
436B	Meadowbank silt loam, 2 to 5 percent slopes	240	0.1
445	Newhaven loam	450	0.1
446	Springerton loam	1,010	0.3
453B	Muren silt loam, 2 to 5 percent slopes	940	0.3
467B2	Markland silt loam, 2 to 5 percent slopes, eroded	560	0.2
467C2	Markland silt loam, 5 to 10 percent slopes, eroded	350	0.1
467C3	Markland silty clay loam, 5 to 10 percent slopes, severely eroded	330	0.1
482B	Uniontown silt loam, 2 to 5 percent slopes	3,730	1.2
482B2	Uniontown silt loam, 2 to 5 percent slopes, eroded	2,270	0.7
482C2	Uniontown silt loam, 5 to 10 percent slopes, eroded	690	0.2
482C3	Uniontown silty clay loam, 5 to 10 percent slopes, severely eroded	810	0.3
483	Henshaw silt loam	8,870	2.8
484	Harco silt loam	400	0.1
585F	Negley loam, 18 to 30 percent slopes	100	*
750A	Skelton fine sandy loam, 0 to 2 percent slopes	590	0.2
750B	Skelton fine sandy loam, 2 to 5 percent slopes	1,020	0.3
750C2	Skelton fine sandy loam, 5 to 10 percent slopes, eroded	310	0.1
751	Crawleyville fine sandy loam	1,030	0.3
784F	Berks loam, 18 to 30 percent slopes	760	0.2
802B	Orthents, loamy, nonacid, 1 to 7 percent slopes	880	0.3
865	Pits, gravel	310	0.1
898G	Sylvan-Hickory complex, 30 to 50 percent slopes	1,700	0.5
929D3	Ava-Hickory complex, 10 to 18 percent slopes, severely eroded	4,900	1.5
1288	Petrolia silty clay loam, wet	6,490	2.0
3092	Sarpy sandy loam, frequently flooded	590	0.2
3103	Houghton muck, frequently flooded	110	*
3108	Bonnie silt loam, frequently flooded	18,870	5.9
3142	Patton silty clay loam, frequently flooded	3,500	1.1
3178	Ruark loam, frequently flooded	960	0.3
3231	Evansville silt loam, frequently flooded	460	0.1
3302	Ambraw loam, frequently flooded	990	0.3
3304	Landes sandy loam, frequently flooded	2,020	0.6
3331	Haymond silt loam, frequently flooded	940	0.3
3333	Wakeland silt loam, frequently flooded	3,620	1.1
3382	Belknap silt loam, frequently flooded	17,490	5.4
3420	Piopolis silty clay loam, frequently flooded	1,780	0.6
3465	Montgomery silty clay, frequently flooded	1,130	0.4
3524	Zipp silty clay, frequently flooded	2,020	0.6
3597	Armiesburg silty clay loam, frequently flooded	6,840	2.1
3601	Nolin silty clay loam, frequently flooded	5,220	1.6
3602	Newark silty clay loam, frequently flooded	5,090	1.6
3665	Stonelick loam, frequently flooded	3,190	1.0
7087	Dickinson fine sandy loam, rarely flooded	560	0.2
7109	Racoon silt loam, rarely flooded	2,330	0.7
7131A	Alvin fine sandy loam, 0 to 2 percent slopes, rarely flooded	2,460	0.8
7131B	Alvin fine sandy loam, 2 to 5 percent slopes, rarely flooded	1,110	0.3
7142	Patton silty clay loam, rarely flooded	5,080	1.6
7142+	Patton silt loam, overwash, rarely flooded	70	*
7173A	McGary silt loam, 0 to 2 percent slopes, rarely flooded	3,090	1.0
7173B	McGary silt loam, 2 to 5 percent slopes, eroded, rarely flooded	470	0.1
7176	Marissa silt loam, rarely flooded	860	0.3
7178	Ruark loam, rarely flooded	5,820	1.8
7184	Roby fine sandy loam, rarely flooded	1,120	0.3
7208	Sexton silt loam, rarely flooded	3,860	1.2
7434A	Ridgway silt loam, 0 to 2 percent slopes, rarely flooded	1,270	0.4
7434B	Ridgway silt loam, 2 to 5 percent slopes, rarely flooded	750	0.2
7436	Meadowbank silt loam, rarely flooded	780	0.2
7445	Newhaven loam, rarely flooded	590	0.2
7446	Springerton loam, rarely flooded	2,240	0.7
7462A	Sciotoville silt loam, 0 to 2 percent slopes, rarely flooded	2,210	0.7
7462B	Sciotoville silt loam, 2 to 5 percent slopes, rarely flooded	860	0.3

See footnote at end of table.

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

Map symbol	Soil name	Acres	Percent
7465	Montgomery silty clay, rarely flooded	4,570	1.4
7467B	Markland silt loam, 2 to 5 percent slopes, eroded, rarely flooded	480	0.1
7467C	Markland silt loam, 5 to 10 percent slopes, eroded, rarely flooded	550	0.2
7482B	Uniontown silt loam, 2 to 5 percent slopes, eroded, rarely flooded	840	0.3
7482C	Uniontown silt loam, 5 to 10 percent slopes, eroded, rarely flooded	160	*
7483	Henshaw silt loam, rarely flooded	3,730	1.2
7484	Harco silt loam, rarely flooded	440	0.1
7524	Zipp silty clay, rarely flooded	3,780	1.2
7524+	Zipp silt loam, overwash, rarely flooded	440	0.1
7750A	Skelton fine sandy loam, 0 to 2 percent slopes, rarely flooded	3,590	1.1
7750B	Skelton fine sandy loam, 2 to 5 percent slopes, rarely flooded	1,580	0.5
7750C	Skelton fine sandy loam, 5 to 10 percent slopes, eroded, rarely flooded	1,060	0.3
7751	Crawleyville fine sandy loam, 0 to 2 percent slopes, rarely flooded	4,220	1.3
7787	Banlic silt loam, rarely flooded	500	0.2
7812E	Typic Hapludalfs, 10 to 30 percent slopes, rarely flooded	1,250	0.4
8072	Sharon silt loam, occasionally flooded	850	0.3
8460	Ginat silt loam, occasionally flooded	1,600	0.5
	Water	4,900	1.5
	Total	321,360	100.0

* Less than 0.05 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
2	Cisne silt loam (where drained)
3A	Hoyleton silt loam, 0 to 2 percent slopes (where drained)
3B	Hoyleton silt loam, 2 to 5 percent slopes
12	Wynoose silt loam (where drained)
13A	Bluford silt loam, 0 to 2 percent slopes (where drained)
13B	Bluford silt loam, 2 to 5 percent slopes
13B2	Bluford silt loam, 2 to 5 percent slopes, eroded
14B	Ava silt loam, 2 to 5 percent slopes
14B2	Ava silt loam, 2 to 5 percent slopes, eroded
15B	Parke silt loam, 2 to 5 percent slopes
75B	Drury silt loam, 2 to 5 percent slopes
87A	Dickinson fine sandy loam, 0 to 2 percent slopes
87B	Dickinson fine sandy loam, 2 to 5 percent slopes
109	Racoon silt loam (where drained)
131A	Alvin fine sandy loam, 0 to 2 percent slopes
131B	Alvin fine sandy loam, 2 to 5 percent slopes
142	Patton silty clay loam (where drained)
142+	Patton silt loam, overwash (where drained)
164A	Stoy silt loam, 0 to 2 percent slopes
164B	Stoy silt loam, 2 to 5 percent slopes
165	Weir silt loam (where drained)
173A	McGary silt loam, 0 to 2 percent slopes
173B2	McGary silt loam, 2 to 5 percent slopes, eroded
176	Marissa silt loam (where drained)
178	Ruark loam (where drained)
184	Roby fine sandy loam
208	Sexton silt loam (where drained)
214B	Hosmer silt loam, 2 to 5 percent slopes
214B2	Hosmer silt loam, 2 to 5 percent slopes, eroded
231	Evansville silt loam (where drained)
301B	Grantsburg silt loam, 2 to 5 percent slopes
308B	Alford silt loam, 2 to 5 percent slopes
308B2	Alford silt loam, 2 to 5 percent slopes, eroded
337	Creal silt loam
434A	Ridgway silt loam, 0 to 2 percent slopes
434B	Ridgway silt loam, 2 to 5 percent slopes
436A	Meadowbank silt loam, 0 to 2 percent slopes
436B	Meadowbank silt loam, 2 to 5 percent slopes
445	Newhaven loam
446	Springerton loam (where drained)
453B	Muren silt loam, 2 to 5 percent slopes
467B2	Markland silt loam, 2 to 5 percent slopes, eroded
482B	Uniontown silt loam, 2 to 5 percent slopes
482B2	Uniontown silt loam, 2 to 5 percent slopes, eroded
483	Henshaw silt loam
484	Harco silt loam
750A	Skelton fine sandy loam, 0 to 2 percent slopes
750B	Skelton fine sandy loam, 2 to 5 percent slopes
751	Crawleyville fine sandy loam
3108	Bonnie silt loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3142	Patton silty clay loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3178	Ruark loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3231	Evansville silt loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3302	Ambraw loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)

TABLE 5.--PRIME FARMLAND--Continued

Map symbol	Soil name
3304	Landes sandy loam, frequently flooded (where 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 either protected from flooding or not frequently flooded during the growing season)
3382	Belknap silt loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3420	Piopolis silty clay loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3465	Montgomery silty clay, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3524	Zipp silty clay, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3597	Armiesburg silty clay loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3601	Nolin silty clay loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3602	Newark silty clay loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3665	Stonelick loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
7087	Dickinson fine sandy loam, rarely flooded
7109	Racoon silt loam, rarely flooded (where drained)
7131A	Alvin fine sandy loam, 0 to 2 percent slopes, rarely flooded
7131B	Alvin fine sandy loam, 2 to 5 percent slopes, rarely flooded
7142	Patton silty clay loam, rarely flooded (where drained)
7142+	Patton silt loam, overwash, rarely flooded (where drained)
7173A	McGary silt loam, 0 to 2 percent slopes, rarely flooded (where drained)
7173B	McGary silt loam, 2 to 5 percent slopes, eroded, rarely flooded
7176	Marissa silt loam, rarely flooded (where drained)
7178	Ruark loam, rarely flooded (where drained)
7184	Roby fine sandy loam, rarely flooded
7208	Sexton silt loam, rarely flooded (where drained)
7434A	Ridgway silt loam, 0 to 2 percent slopes, rarely flooded
7434B	Ridgway silt loam, 2 to 5 percent slopes, rarely flooded
7436	Meadowbank silt loam, rarely flooded
7445	Newhaven loam, rarely flooded (where drained)
7446	Springerton loam, rarely flooded (where drained)
7462A	Sciotoville silt loam, 0 to 2 percent slopes, rarely flooded
7462B	Sciotoville silt loam, 2 to 5 percent slopes, rarely flooded
7465	Montgomery silty clay, rarely flooded (where drained)
7467B	Markland silt loam, 2 to 5 percent slopes, eroded, rarely flooded
7482B	Uniontown silt loam, 2 to 5 percent slopes, eroded, rarely flooded
7483	Henshaw silt loam, rarely flooded
7484	Harco silt loam, rarely flooded
7524	Zipp silty clay, rarely flooded (where drained)
7524+	Zipp silt loam, overwash, rarely flooded (where drained)
7750A	Skelton fine sandy loam, 0 to 2 percent slopes, rarely flooded
7750B	Skelton fine sandy loam, 2 to 5 percent slopes, rarely flooded
7751	Crawleyville fine sandy loam, 0 to 2 percent slopes, rarely flooded
7787	Banlic silt loam, rarely flooded (where drained)
8072	Sharon silt loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
8460	Ginat silt loam, occasionally flooded (where drained)

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)

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Orchard-grass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Tons	AUM*
2---------- Cisne	IIIw	115	35	52	4.5	---
3A---------- Hoyleton	IIw	116	34	53	4.7	7.5
3B---------- Hoyleton	IIe	115	34	52	4.7	7.4
8D2---------- Hickory	IIIe	72	23	26	2.7	4.5
8F---------- Hickory	VIe	---	---	---	2.4	4.0
8G---------- Hickory	VIIe	---	---	---	---	3.0
12---------- Wynoose	IIIw	96	33	46	---	---
13A---------- Bluford	IIw	103	33	49	4.1	6.8
13B---------- Bluford	IIe	102	33	49	4.1	6.8
13B2---------- Bluford	IIe	99	32	47	3.9	6.5
14B---------- Ava	IIe	97	33	48	4.3	7.2
14B2---------- Ava	IIe	92	31	45	4.0	7.2
14C2---------- Ava	IIIe	89	30	44	3.9	6.8
14C3---------- Ava	IVe	74	25	36	3.3	5.5
15B---------- Parke	IIe	115	40	46	3.8	7.6
15C2---------- Parke	IIIe	105	37	42	3.4	7.0
15D2---------- Parke	IVe	90	32	36	3.0	6.0
19C3---------- Sylvan	IVe	97	30	46	4.3	7.2
19D3---------- Sylvan	IVe	93	29	44	4.1	6.9

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Orchard-grass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Tons	AUM*
19F---------- Sylvan	VIe	---	---	---	3.7	6.2
53B---------- Bloomfield	IIIs	79	31	41	3.2	5.3
53C---------- Bloomfield	IIIe	75	29	39	3.0	5.0
53D---------- Bloomfield	IVe	73	29	38	2.9	4.8
75B---------- Drury	IIe	125	40	56	4.9	8.2
87A---------- Dickinson	IIIs	112	38	45	4.7	7.9
87B---------- Dickinson	IIIe	109	37	44	4.6	7.7
109---------- Racoon	IIIw	108	35	35	---	---
131A---------- Alvin	IIs	98	33	48	4.3	7.2
131B---------- Alvin	IIe	97	33	48	4.3	7.1
131C---------- Alvin	IIIe	92	31	45	4.0	6.7
131F---------- Alvin	VIe	---	---	---	3.1	5.3
142, 142+------- Patton	IIw	148	48	56	---	---
164A---------- Stoy	IIw	112	35	52	4.5	7.5
164B---------- Stoy	IIe	111	35	51	4.5	7.4
165---------- Weir	IIIw	103	34	45	---	---
173A---------- McGary	IIIw	100	35	45	3.3	---
173B2---------- McGary	IIIe	95	32	42	3.1	---
176---------- Marissa	IIw	137	44	57	5.3	8.9
178---------- Ruark	IIIw	100	35	44	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Orchard-grass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Tons	AUM*
184--Roby	IIs	98	36	45	4.0	6.7
208--Sexton	IIw	120	37	48	---	---
214B--Hosmer	IIe	105	37	47	3.4	6.8
214B2--Hosmer	IIe	95	33	43	3.1	6.2
214C2--Hosmer	IIIe	85	30	38	2.8	5.6
214C3--Hosmer	IVe	75	26	34	2.5	5.0
231--Evansville	IIw	145	51	58	4.8	9.0
301B--Grantsburg	IIe	94	33	46	4.1	6.7
308B--Alford	IIe	125	44	50	4.1	8.2
308B2--Alford	IIe	120	42	48	4.0	8.0
308C2--Alford	IIIe	110	38	44	3.6	7.2
308C3--Alford	IVe	105	37	42	3.4	6.8
308D2--Alford	IVe	95	33	38	3.1	6.2
308D3--Alford	VIe	---	---	---	3.0	6.0
337--Creal	IIw	109	35	51	---	---
339F--Wellston	VIe	---	---	---	---	3.5
340C2--Zanesville	IIIe	75	30	33	3.0	5.8
340C3--Zanesville	IVe	60	20	26	2.9	4.9
340D2--Zanesville	IVe	65	45	30	2.8	4.5
340D3--Zanesville	VIe	---	---	---	2.4	3.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Orchard-grass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Tons	AUM*
434A---------- Ridgway	I	120	40	50	5.0	8.3
434B---------- Ridgway	IIe	118	40	49	4.9	8.2
434C2---------- Ridgway	IIIe	109	37	45	4.5	7.6
436A---------- Meadowbank	I	145	45	60	4.5	---
436B---------- Meadowbank	IIe	143	44	59	---	---
445---------- Newhaven	I	130	43	55	---	---
446---------- Springerton	IIw	135	45	53	---	---
453B---------- Muren	IIe	125	44	50	4.1	8.2
467B2---------- Markland	IIIe	80	28	36	2.6	5.2
467C2---------- Markland	IVe	70	24	32	2.3	4.6
467C3---------- Markland	VIe	---	---	---	2.0	4.0
482B---------- Uniontown	IIe	115	40	45	5.0	9.0
482B2---------- Uniontown	IIe	110	35	40	4.5	8.5
482C2---------- Uniontown	IIIe	90	35	40	4.5	8.5
482C3---------- Uniontown	IVe	75	25	30	4.0	7.5
483---------- Henshaw	IIw	115	50	50	---	---
484---------- Harco	I	154	47	62	5.6	9.3
585F---------- Negley	VIe	---	---	---	3.8	6.0
750A---------- Skelton	I	110	38	44	3.6	7.2
750B---------- Skelton	IIe	108	37	43	3.5	7.1
750C2---------- Skelton	IIIe	108	37	43	3.3	6.6

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Orchard-grass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Tons	AUM*
751---------- Crawleyville	IIw	110	38	44	3.6	7.2
784F---------- Berks	VIe	---	---	---	---	5.5
802B**. Orthents						
865**. Pits						
898G**---------- Sylvan-Hickory	VIIe	---	---	---	---	---
929D3**--------- Ava-Hickory	IVe	62	21	27	2.6	5.2
1288---------- Petrolia	Vw	---	---	---	---	---
3092---------- Sarpy	IVs	49	18	20	---	---
3103---------- Houghton	VIIIw	---	---	---	---	---
3108---------- Bonnie	IIIw	96	31	---	---	---
3142---------- Patton	IIIw	126	41	---	---	---
3178---------- Ruark	IVw	85	30	---	---	---
3231---------- Evansville	IIw	140	49	55	---	---
3302---------- Ambraw	IVw	100	30	---	---	---
3304---------- Landes	IIIw	67	23	30	---	---
3331---------- Haymond	IIw	110	39	42	---	---
3333---------- Wakeland	IIw	125	44	50	---	---
3382---------- Belknap	IIIw	112	35	49	---	---
3420---------- Piopolis	IVw	98	33	---	---	---
3465---------- Montgomery	IIIw	105	37	---	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Orchard-grass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Tons	AUM*
3524---------- Zipp	IIIw	95	33	---	---	---
3597---------- Armiesburg	IIw	110	42	47	---	---
3601---------- Nolin	IIw	105	35	38	---	---
3602---------- Newark	IIIw	95	35	---	---	---
3665---------- Stonelick	IIIw	80	28	35	---	---
7087---------- Dickinson	IIIs	112	38	45	4.7	7.9
7109---------- Racoon	IIw	108	35	48	---	---
7131A---------- Alvin	IIs	98	33	48	4.3	7.2
7131B---------- Alvin	IIe	97	33	48	4.3	7.1
7142, 7142+----- Patton	IIw	148	48	56	---	---
7173A---------- McGary	IIw	100	35	45	3.3	---
7173B---------- McGary	IIe	95	33	38	3.1	---
7176---------- Marissa	IIw	137	44	57	5.3	8.9
7178---------- Ruark	IIw	100	35	44	---	---
7184---------- Roby	IIs	98	36	45	4.0	6.7
7208---------- Sexton	IIw	120	37	48	---	---
7434A---------- Ridgway	I	120	40	50	5.0	8.3
7434B---------- Ridgway	IIe	118	40	49	4.9	8.2
7436---------- Meadowbank	I	145	45	60	---	---
7445---------- Newhaven	I	130	43	55	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Orchard-grass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Tons	AUM*
7446---------- Springerton	IIw	135	45	53	---	---
7462A---------- Sciotoville	IIw	115	40	45	4.3	---
7462B---------- Sciotoville	IIe	115	35	45	4.3	---
7465---------- Montgomery	IIIw	115	40	46	---	---
7467B---------- Markland	IIIe	80	28	36	2.6	5.2
7467C---------- Markland	IVe	70	24	32	2.3	4.6
7482B---------- Uniontown	IIe	110	35	40	4.5	8.5
7482C---------- Uniontown	IIIe	90	34	38	4.4	8.3
7483---------- Henshaw	IIw	115	50	50	---	---
7484---------- Harco	I	154	47	62	5.6	9.3
7524, 7524+----- Zipp	IIIw	105	37	42	3.4	---
7750A---------- Skelton	I	110	38	44	3.6	7.2
7750B---------- Skelton	IIe	108	37	42	3.5	7.1
7750C---------- Skelton	IIIe	100	35	40	3.3	6.6
7751---------- Crawleyville	IIw	110	38	44	---	---
7787---------- Banlic	IIw	115	37	46	4.2	7.0
7812E**--------- Hapludalfs	VIe	---	---	---	---	---
8072---------- Sharon	IIw	99	30	41	3.8	---
8460---------- Ginat	IIIw	115	40	46	---	---

* 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.

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

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

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

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
2---------- Cisne	4W	Slight	Severe	Moderate	Moderate	Pin oak----------	70	4	Pin oak, green ash, water tupelo, red maple.
						White oak----------	---	---	
						Black oak----------	---	---	
						Bitternut hickory---	---	---	
3A, 3B---------- Hoyleton	4A	Slight	Slight	Slight	Slight	White oak----------	70	4	Shortleaf pine, white oak, eastern white pine, eastern cottonwood, northern red oak, green ash.
						Northern red oak----	70	4	
						Green ash----------	---	---	
						Bur oak----------	---	---	
8D2---------- Hickory	5A	Slight	Slight	Slight	Slight	White oak----------	85	5	White oak, yellow-poplar, eastern white pine, red pine, sugar maple, black walnut.
						Northern red oak----	85	5	
						Black oak----------	---	---	
						Green ash----------	---	---	
						Bitternut hickory---	---	---	
						Yellow-poplar-------	95	7	
8F---------- Hickory	5R	Moderate	Moderate	Slight	Slight	White oak----------	85	5	White oak, yellow-poplar, eastern white pine, red pine, sugar maple, black walnut.
						Northern red oak----	85	5	
						Black oak----------	---	---	
						Green ash----------	---	---	
						Bitternut hickory---	---	---	
						Yellow-poplar-------	95	7	
8G---------- Hickory	5R	Severe	Severe	Slight	Slight	White oak----------	85	5	White oak, yellow-poplar, eastern white pine, red pine, sugar maple, black walnut.
						Northern red oak----	85	5	
						Black oak----------	---	---	
						Green ash----------	---	---	
						Bitternut hickory---	---	---	
						Yellow-poplar-------	95	7	
12---------- Wynoose	4W	Slight	Severe	Moderate	Moderate	Pin oak----------	70	4	Pin oak, red maple.
						White oak----------	---	---	
						Black oak----------	---	---	
13A, 13B, 13B2-- Bluford	4A	Slight	Slight	Slight	Slight	White oak----------	70	4	Shortleaf pine, loblolly pine, eastern white pine, eastern redcedar.
						Northern red oak----	70	4	
						Southern red oak----	70	4	
						Green ash----------	---	---	
						Bur oak----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
14B, 14B2, 14C2, 14C3---------- Ava	4A	Slight	Slight	Slight	Slight	White oak----------	75	4	Black walnut, eastern cottonwood, sweetgum, yellow-poplar, white oak, American sycamore.
						Northern red oak----	80	4	
						Yellow-poplar-------	90	6	
						Black walnut--------	---	---	
15B, 15C2, 15D2- Parke	5A	Slight	Slight	Slight	Slight	White oak----------	90	5	Eastern white pine, red pine, black walnut, yellow-poplar, white ash, black locust, northern red oak, green ash, black cherry, American sycamore, eastern cottonwood,
						Yellow-poplar-------	98	7	
						Sweetgum----------	76	5	
19C3, 19D3------ Sylvan	6A	Slight	Slight	Slight	Slight	Yellow-poplar-------	90	6	White oak, black walnut, northern red oak, green ash, eastern white pine, red pine, sugar maple.
						White oak----------	80	4	
						Northern red oak----	80	4	
						Black walnut--------	---	---	
19F---------- Sylvan	6R	Moderate	Moderate	Moderate	Slight	Yellow-poplar-------	90	6	White oak, black walnut, northern red oak, green ash, eastern white pine, red pine, sugar maple.
						White oak----------	80	4	
						Northern red oak----	80	4	
						Black walnut--------	---	---	
53B, 53C, 53D--- Bloomfield	4S	Slight	Slight	Moderate	Slight	Black oak----------	70	4	Eastern white pine, Scotch pine, red pine, eastern redcedar, jack pine.
						White oak----------	---	---	
						Scarlet oak---------	---	---	
						Shagbark hickory----	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
75B---------- Drury	7A	Slight	Slight	Slight	Slight	Yellow-poplar----------	95	7	Yellow-poplar, white oak, northern red oak, sweetgum, black walnut, eastern white pine, loblolly pine, shortleaf pine.
						White oak----------	85	5	
						Northern red oak----	85	5	
						Sweetgum----------	---	---	
						Green ash----------	---	---	
109---------- Racoon	4W	Slight	Severe	Severe	Severe	Pin oak----------	80	4	Pin oak, red maple, baldcypress, water tupelo.
						Post oak----------	80	4	
						Green ash----------	---	---	
						White oak----------	---	---	
131A, 131B, 131C---------- Alvin	4A	Slight	Slight	Slight	Slight	White oak----------	80	4	Green ash, black walnut, yellow-poplar, white oak, eastern white pine, American sycamore, sugar maple.
						Northern red oak----	80	4	
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
131F---------- Alvin	4R	Moderate	Moderate	Slight	Slight	White oak----------	80	4	Green ash, black walnut, yellow-poplar, white oak, eastern white pine, American sycamore, sugar maple.
						Northern red oak----	80	4	
						Black walnut--------	---	---	
						Yellow-poplar-------	90	6	
142, 142+------- Patton	5W	Slight	Severe	Moderate	Moderate	Pin oak----------	85	5	Pin oak, sweetgum, eastern white pine, baldcypress, Norway spruce, red maple, white ash.
						White oak----------	75	4	
						Sweetgum----------	80	6	
						Northern red oak----	75	4	
164A, 164B------ Stoy	4A	Slight	Slight	Slight	Slight	White oak----------	70	4	Shortleaf pine, loblolly pine, eastern white pine, Scotch pine, eastern redcedar.
						Southern red oak----	70	4	
						White ash----------	---	---	
						Bur oak----------	---	---	
165---------- Weir	4W	Slight	Moderate	Moderate	Slight	Pin oak----------	70	4	Baldcypress, pin oak, water tupelo, red maple.
						White oak----------	---	---	
						Black oak----------	---	---	
						Pignut hickory------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
173A, 173B2---- McGary	4W	Slight	Moderate	Severe	Severe	White oak Pin oak Yellow-poplar Sweetgum	70 85 85 80	4 5 6 6	Eastern white pine, baldcypress, white ash, red maple, yellow-poplar, American sycamore, eastern cottonwood, green ash.
178---- Ruark	4W	Slight	Moderate	Moderate	Slight	Pin oak White oak Green ash Yellow-poplar	80 --- --- 80	4 --- --- 5	Baldcypress, pin oak, green ash, water tupelo, red maple.
184---- Roby	4A	Slight	Slight	Slight	Slight	White oak Northern red oak Yellow-poplar Black walnut	80 80 90 ---	4 4 6 ---	Black walnut, eastern cottonwood, American sycamore, yellow-poplar, white oak, eastern white pine.
208---- Sexton	4W	Slight	Severe	Moderate	Severe	Pin oak White oak Green ash Yellow-poplar	80 --- --- 80	4 --- --- 5	Pin oak, baldcypress, water tupelo, red maple.
214B, 214B2, 214C2, 214C3--- Hosmer	4A	Slight	Slight	Slight	Slight	White oak Yellow-poplar Virginia pine Sugar maple	75 90 75 75	4 6 8 3	Eastern white pine, shortleaf pine, red pine, yellow-poplar, white ash.
231---- Evansville	5W	Slight	Severe	Moderate	Moderate	Pin oak White oak Sweetgum	90 75 90	5 4 7	Sweetgum, eastern white pine, baldcypress, Norway spruce, red maple, white ash.
301B---- Grantsburg	3D	Slight	Slight	Moderate	Moderate	White oak Southern red oak Black oak White ash	60 60 60 ---	3 3 3 ---	White ash, eastern white pine, loblolly pine, Scotch pine, eastern redcedar.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
308B, 308B2, 308C2, 308C3, 308D2, 308D3---Alford	5A	Slight	Slight	Slight	Slight	White oak	90	5	Eastern white pine, red pine, black walnut, yellow-poplar, white ash, black locust.
						Yellow-poplar	98	7	
						Sweetgum	76	5	
337---Creal	4A	Slight	Slight	Slight	Slight	White oak	70	4	White oak, northern red oak, green ash, eastern white pine, pecan, white ash, yellow-poplar.
						Northern red oak	70	4	
						Green ash	---	---	
						Bur oak	---	---	
339F---Wellston	4R	Moderate	Moderate	Slight	Slight	Northern red oak	81	4	Eastern white pine, black walnut, yellow-poplar, white oak, northern red oak, Scotch pine, Norway spruce, white spruce, white ash, Fraser fir, red pine, green ash, black cherry, black locust,
						Yellow-poplar	90	6	
						Virginia pine	70	8	
						White oak	---	---	
						Black walnut	---	---	
						Black cherry	---	---	
						Sugar maple	---	---	
						White ash	---	---	
340C2---Zanesville	7A	Slight	Slight	Slight	Slight	Virginia pine	66	7	Yellow-poplar, white ash, white oak, northern red oak, eastern white pine, shortleaf pine.
						Black oak	75	4	
						White oak	69	4	
						Hickory	---	---	
						Yellow-poplar	90	6	
						Shortleaf pine	63	7	
						Sweetgum	---	---	
340C3---Zanesville	6D	Slight	Slight	Moderate	Moderate	Virginia pine	60	6	Virginia pine, shortleaf pine, eastern white pine, white oak.
						Black oak	60	3	
						White oak	60	3	
						Scarlet oak	---	---	
						Black locust	---	---	
						Post oak	---	---	
340D2---Zanesville	7A	Slight	Slight	Slight	Slight	Virginia pine	66	7	Yellow-poplar, white ash, white oak, northern red oak, eastern white pine, shortleaf pine.
						Black oak	75	4	
						White oak	69	4	
						Hickory	---	---	
						Yellow-poplar	90	6	
						Shortleaf pine	63	7	
						Sweetgum	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
340D3---------- Zanesville	6D	Slight	Slight	Moderate	Moderate	Virginia pine-------	60	6	Virginia pine, shortleaf pine, eastern white pine, white oak.
						Black oak----------	60	3	
						White oak----------	60	3	
						Scarlet oak---------	---	---	
						Black locust--------	---	---	
						Post oak----------	---	---	
434A, 434B, 434C2---------- Ridgway	7A	Slight	Slight	Slight	Slight	Yellow-poplar-------	95	7	Yellow-poplar, white oak, green ash, black walnut, eastern white pine.
						White oak----------	85	5	
						Sweetgum----------	80	6	
						Green ash----------	76	5	
453B---------- Muren	5A	Slight	Slight	Slight	Slight	White oak----------	90	5	Eastern white pine, red pine, black walnut, black locust, yellow-poplar, white ash.
						Yellow-poplar-------	98	7	
						Sweetgum----------	76	5	
467B2, 467C2, 467C3---------- Markland	4C	Slight	Slight	Severe	Severe	White oak----------	75	4	Eastern white pine, red pine, yellow-poplar, white ash.
						Northern red oak----	78	4	
482B, 482B2, 482C2---------- Uniontown	6A	Slight	Slight	Slight	Slight	Yellow-poplar-------	89	6	Yellow-poplar, black walnut, white ash, white oak, northern red oak, eastern white pine, sweetgum.
						Northern red oak----	83	4	
						Black oak----------	82	4	
						Shumard oak---------	83	4	
						Sweetgum----------	79	5	
						Hickory----------	---	---	
						White oak----------	---	---	
482C3---------- Uniontown	4A	Slight	Slight	Slight	Slight	Northern red oak----	70	4	White ash, eastern white pine, northern red oak, white oak.
						Black oak----------	70	4	
						White oak----------	65	3	
						Hickory----------	---	---	
						Elm----------	---	---	
						Red maple----------	---	---	
						Sweetgum----------	---	---	
483---------- Henshaw	6W	Slight	Moderate	Slight	Slight	Pin oak----------	91	6	Green ash, sweetgum, eastern cottonwood, yellow-poplar, eastern white pine, loblolly pine.
						Green ash----------	---	---	
						Sweetgum----------	95	8	
						Hackberry----------	---	---	
						American sycamore---	---	---	
						White oak----------	---	---	
						Red maple----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
585F---------- Negley	5R	Moderate	Moderate	Slight	Slight	Northern red oak----	94	5	Eastern white pine, yellow-poplar, red pine, white ash, white oak, northern red oak.
						Yellow-poplar-------	99	7	
						Black walnut--------	---	---	
						Black cherry--------	---	---	
						Sugar maple---------	---	---	
						White ash-----------	---	---	
750A, 750B, 750C2---------- Skelton	4A	Slight	Slight	Slight	Slight	Northern red oak----	80	4	Yellow-poplar, eastern white pine, American sycamore, white oak, white ash.
						Yellow-poplar-------	90	6	
751---------- Crawleyville	4A	Slight	Slight	Slight	Slight	White oak-----------	70	4	White oak, yellow-poplar, northern red oak, eastern white pine, white ash, American sycamore, green ash, red pine, black cherry, eastern cottonwood.
						Pin oak-------------	85	5	
						Yellow-poplar-------	85	6	
						Sweetgum------------	80	6	
						Northern red oak----	75	4	
784F---------- Berks	4F	Slight	Moderate	Moderate	Slight	Northern red oak----	70	4	Virginia pine, eastern white pine, Japanese larch, Norway spruce, red pine.
						Black oak-----------	70	4	
						Virginia pine-------	70	8	
898G**: Sylvan---------	6R	Moderate	Moderate	Moderate	Slight	Yellow-poplar-------	90	6	White oak, black walnut, northern red oak, green ash, eastern white pine, red pine, sugar maple.
						White oak-----------	80	4	
						Northern red oak----	80	4	
						Black walnut--------	---	---	
Hickory--------	5R	Severe	Severe	Slight	Slight	White oak-----------	85	5	White oak, yellow-poplar, eastern white pine, red pine, sugar maple, black walnut.
						Northern red oak----	85	5	
						Black oak-----------	---	---	
						Green ash-----------	---	---	
						Bitternut hickory---	---	---	
						Yellow-poplar-------	95	7	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
929D3**:									
Ava	4A	Slight	Slight	Slight	Slight	White oak	75	4	Black walnut, eastern cottonwood, sweetgum, yellow-poplar, white oak, American sycamore.
						Northern red oak	80	4	
						Yellow-poplar	90	6	
						Black walnut	---	---	
Hickory	5A	Slight	Slight	Slight	Slight	White oak	85	5	White oak, yellow-poplar, eastern white pine, red pine, sugar maple, black walnut.
						Northern red oak	85	5	
						Black oak	---	---	
						Green ash	---	---	
						Bitternut hickory	---	---	
						Yellow-poplar	95	7	
1288 Petrolia	5W	Slight	Moderate	Moderate	Slight	Pin oak	90	5	Eastern cottonwood, red maple, American sycamore, baldcypress, water tupelo.
						Eastern cottonwood	100	9	
						Sweetgum	---	---	
						Cherrybark oak	---	---	
						American sycamore	---	---	
3092 Sarpy	3S	Slight	Slight	Severe	Slight	Silver maple	90	3	Eastern cottonwood, American sycamore, black willow.
						Eastern cottonwood	95	8	
3108 Bonnie	5W	Slight	Severe	Severe	Severe	Pin oak	90	5	Eastern cottonwood, red maple, American sycamore, sweetgum, baldcypress, pin oak.
						Eastern cottonwood	100	9	
						Sweetgum	---	---	
						Cherrybark oak	---	---	
						American sycamore	---	---	
3142 Patton	5W	Slight	Severe	Moderate	Moderate	Pin oak	85	5	Pin oak, sweetgum, eastern white pine, baldcypress, Norway spruce, red maple, white ash.
						White oak	75	4	
						Sweetgum	80	6	
						Northern red oak	75	4	
3178 Ruark	4W	Slight	Moderate	Moderate	Slight	Pin oak	80	4	Pin oak, green ash, red maple, water tupelo.
						White oak	---	---	
						Green ash	---	---	
						Yellow-poplar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
3231---------- Evansville	5W	Slight	Moderate	Severe	Severe	Pin oak----------	90	5	Sweetgum, red maple, eastern white pine, baldcypress, green ash, white ash.
						Swamp white oak-----	75	4	
						Sweetgum----------	90	7	
						Silver maple--------	---	---	
						Eastern cottonwood--	---	---	
						Red maple----------	---	---	
3304---------- Landes	7A	Slight	Slight	Slight	Slight	Yellow-poplar-------	95	7	Yellow-poplar, eastern cottonwood, American sycamore, sweetgum, green ash, black walnut, eastern white pine, sugar maple.
						Eastern cottonwood--	105	10	
						American sycamore---	---	---	
						Sweetgum----------	---	---	
						Green ash----------	---	---	
3331---------- Haymond	8A	Slight	Slight	Slight	Slight	Yellow-poplar-------	100	8	Eastern white pine, black walnut, yellow-poplar, black locust.
						White oak----------	90	5	
						Black walnut--------	70	---	
3333---------- Wakeland	5A	Slight	Slight	Slight	Slight	Pin oak----------	90	5	Eastern white pine, baldcypress, American sycamore, red maple, white ash.
						Sweetgum----------	88	7	
						Yellow-poplar-------	90	6	
						Virginia pine-------	85	9	
3382---------- Belknap	6A	Slight	Slight	Slight	Slight	Yellow-poplar-------	90	6	Eastern cottonwood, red maple, American sycamore, sweetgum, baldcypress.
						Eastern cottonwood--	100	9	
						American sycamore---	---	---	
						Sweetgum----------	---	---	
						Pin oak----------	90	5	
3420---------- Piopolis	5W	Slight	Severe	Severe	Severe	Pin oak----------	90	5	Eastern cottonwood, red maple, American sycamore, sweetgum, pin oak, baldcypress.
						Eastern cottonwood--	100	9	
						Sweetgum----------	---	---	
						Cherrybark oak------	---	---	
						American sycamore---	---	---	
						Post oak----------	---	---	
3465---------- Montgomery	5W	Slight	Severe	Severe	Severe	Pin oak----------	85	5	American sycamore, pin oak, green ash, red maple, eastern cottonwood, silver maple.
						Red maple----------	---	---	
						Sweetgum----------	90	7	
						American sycamore---	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
3524---------- Zipp	5W	Slight	Severe	Severe	Severe	Pin oak----------	86	5	Sweetgum, eastern white pine, baldcypress, red maple, white ash.
						White oak----------	75	4	
						Sweetgum----------	90	7	
3597---------- Armiesburg	8A	Slight	Slight	Slight	Slight	Yellow-poplar-------	100	8	Eastern white pine, black walnut, yellow-poplar, black locust.
						White oak----------	90	5	
						Black walnut--------	70	---	
3601---------- Nolin	8W	Slight	Slight	Moderate	Slight	Sweetgum----------	92	8	Eastern cottonwood, green ash, cherrybark oak, sweetgum, pin oak.
						Cherrybark oak------	97	10	
						Eastern cottonwood--	---	---	
						River birch---------	---	---	
						Black willow--------	---	---	
						American sycamore---	---	---	
3602---------- Newark	5W	Slight	Moderate	Slight	Moderate	Pin oak----------	96	5	Eastern cottonwood, sweetgum, American sycamore.
						Eastern cottonwood--	89	7	
						Sweetgum----------	85	6	
						Green ash----------	---	---	
						Cherrybark oak------	---	---	
						Shumard oak---------	---	---	
						Overcup oak---------	---	---	
3665---------- Stonelick	4A	Slight	Slight	Slight	Slight	Northern red oak----	80	4	Eastern white pine, black walnut, yellow-poplar, white ash, red pine, white oak.
						Yellow-poplar-------	95	7	
						White oak----------	---	---	
						Black walnut--------	---	---	
						Black cherry--------	---	---	
						Sugar maple---------	---	---	
						White ash----------	---	---	
7109---------- Racoon	4W	Slight	Severe	Moderate	Severe	Pin oak----------	80	4	Baldcypress, pin oak, water tupelo, red maple.
						Post oak----------	80	4	
						Green ash----------	---	---	
						White oak----------	---	---	
7131A, 7131B---- Alvin	4A	Slight	Slight	Slight	Slight	White oak----------	80	4	White oak, green ash, yellow-poplar, black walnut, eastern white pine, sugar maple.
						Northern red oak----	80	4	
						Yellow-poplar-------	90	6	
						Black walnut--------	---	---	
7142, 7142+----- Patton	5W	Slight	Severe	Moderate	Moderate	Pin oak----------	85	5	Pin oak, sweetgum, eastern white pine, baldcypress, Norway spruce, red maple, white ash.
						White oak----------	75	4	
						Sweetgum----------	80	6	
						Northern red oak----	75	4	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
7173A, 7173B---- McGary	5C	Slight	Slight	Moderate	Severe	Pin oak	85	5	Eastern white pine, baldcypress, white ash, red maple, yellow-poplar, American sycamore, eastern cottonwood, green ash.
						Sweetgum	90	7	
						White oak	75	4	
						White ash	---	---	
						Red maple	---	---	
7178---------- Ruark	4W	Slight	Moderate	Moderate	Slight	Pin oak	80	4	Pin oak, green ash, red maple, water tupelo.
						White oak	---	---	
						Green ash	---	---	
						Yellow-poplar	---	---	
7184---------- Roby	4A	Slight	Slight	Slight	Slight	White oak	80	4	Black walnut, eastern cottonwood, American sycamore, yellow-poplar, white oak, eastern white pine.
						Northern red oak	80	4	
						Yellow-poplar	90	6	
						Black walnut	---	---	
7208---------- Sexton	4W	Slight	Severe	Moderate	Severe	Pin oak	80	4	Baldcypress, pin oak, water tupelo, red maple.
						White oak	---	---	
						Green ash	---	---	
						Yellow-poplar	80	5	
7434A, 7434B---- Ridgway	7A	Slight	Slight	Slight	Slight	Yellow-poplar	95	7	Yellow-poplar, white oak, green ash, black walnut, eastern white pine.
						White oak	85	5	
						Sweetgum	80	6	
						Green ash	76	3	
7462A, 7462B---- Sciotoville	4A	Slight	Slight	Slight	Slight	Northern red oak	80	4	Eastern white pine, yellow-poplar, white ash, red pine, white oak, northern red oak, green ash, black cherry, black locust, American sycamore, eastern cottonwood.
						Yellow-poplar	90	6	
						Sugar maple	80	4	
						Eastern white pine	90	12	
						Black cherry	---	---	
						White ash	---	---	
						White oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
7465---------- Montgomery	5W	Slight	Severe	Severe	Severe	Pin oak----------	85	5	American sycamore, pin oak, green ash, red maple, eastern cottonwood, silver maple.
						Red maple----------	---	---	
						Sweetgum----------	90	7	
						American sycamore---	---	---	
7467B, 7467C---- Markland	4C	Slight	Slight	Severe	Severe	White oak----------	75	4	Eastern white pine, red pine, yellow-poplar, white ash.
						Northern red oak----	78	4	
7482B, 7482C---- Uniontown	6A	Slight	Slight	Slight	Slight	Yellow-poplar-------	89	6	Yellow-poplar, black walnut, white ash, white oak, northern red oak, eastern white pine, sweetgum.
						Northern red oak----	83	4	
						Black oak----------	82	4	
						Shumard oak---------	83	4	
						Sweetgum----------	79	5	
						Hickory----------	---	---	
						White oak----------	---	---	
7483---------- Henshaw	6W	Slight	Moderate	Slight	Slight	Pin oak----------	91	6	Green ash, sweetgum, eastern cottonwood, yellow-poplar, eastern white pine, loblolly pine.
						Green ash----------	---	---	
						Sweetgum----------	95	8	
						Hackberry----------	---	---	
						American sycamore---	---	---	
						White oak----------	---	---	
						Red maple----------	---	---	
7524, 7524+----- Zipp	5W	Slight	Severe	Severe	Severe	Pin oak----------	86	5	Sweetgum, eastern white pine, baldcypress, red maple, white ash.
						White oak----------	75	4	
						Sweetgum----------	90	7	
7750A, 7750B, 7750C---------- Skelton	4A	Slight	Slight	Slight	Slight	Northern red oak----	80	4	Yellow-poplar, eastern white pine, American sycamore, white oak, white ash.
						Yellow-poplar-------	90	6	
7751---------- Crawleyville	4A	Slight	Slight	Slight	Slight	White oak----------	70	4	White oak, yellow-poplar, northern red oak, eastern white pine, white ash, American sycamore, green ash, red pine, black cherry, eastern cottonwood.
						Pin oak----------	85	5	
						Yellow-poplar-------	85	6	
						Sweetgum----------	80	6	
						Northern red oak----	75	4	

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
7787---------- Banlic	4A	Slight	Slight	Slight	Slight	White oak----------	75	4	Black walnut, sweetgum, white oak, yellow-poplar, American sycamore, green ash.
						Pin oak----------	90	5	
						Southern red oak----	85	5	
						Yellow-poplar-------	---	---	
						Black walnut--------	---	---	
7812E**--------- Hapludalfs	5R	Moderate	Moderate	Slight	Slight	White oak----------	85	5	White oak, yellow-poplar, eastern white pine, green ash, black walnut.
						Bur oak----------	---	---	
						Shagbark hickory----	---	---	
8072---------- Sharon	7A	Slight	Slight	Slight	Slight	Yellow-poplar-------	95	7	Black walnut, pin oak, pecan.
						Eastern cottonwood--	105	10	
						American sycamore---	---	---	
						Cherrybark oak------	---	---	
						Sweetgum----------	---	---	
						Green ash----------	---	---	
						Southern red oak----	---	---	
8460---------- Ginat	5W	Slight	Severe	Moderate	Moderate	Pin oak----------	95	5	Eastern white pine, baldcypress, Norway spruce, red maple, white ash, sweetgum.
						White oak----------	75	4	
						Sweetgum----------	90	7	

* 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.

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

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

(The symbol < means less than; > means more than. Absence of an entry indicates that trees generally do not grow to the given height on that soil)

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
2---------- Cisne	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
3A, 3B---------- Hoyleton	Eastern redcedar, Washington hawthorn, Amur privet, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
8D2, 8F, 8G------- Hickory	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
12---------- Wynoose	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
13A, 13B, 13B2---- Bluford	Eastern redcedar, Washington hawthorn, Amur privet, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
14B, 14B2, 14C2, 14C3---------- Ava	Washington hawthorn, Amur privet, eastern redcedar, silky dogwood, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
15B, 15C2, 15D2--- Parke	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, northern whitecedar, blue spruce, white fir.	Austrian pine, Norway spruce.	Pin oak, eastern white pine.
19C3, 19D3, 19F--- Sylvan	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
53B, 53C, 53D----- Bloomfield	Radiant crabapple, eastern redcedar, autumn-olive, Washington hawthorn, Amur honeysuckle,	Austrian pine, jack pine, red pine.	Eastern white pine----	---

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
75B---------- Drury	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
87A, 87B---------- Dickinson	Eastern redcedar, radiant crabapple, Washington hawthorn, autumn-olive, Amur honeysuckle, lilac.	Eastern white pine, Austrian pine, red pine, jack pine.	---	---
109---------- Racoon	Silky dogwood, Amur honeysuckle, Amur privet, American cranberrybush.	Washington hawthorn, blue spruce, northern whitecedar, white fir, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
131A, 131B, 131C, 131F---------- Alvin	Amur privet, Washington hawthorn, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, northern whitecedar, Osage-orange, eastern redcedar.	Eastern white pine, red pine, Norway spruce.	---
142, 142+---------- Patton	Amur privet, silky dogwood, American cranberrybush, Amur honeysuckle.	White fir, northern whitecedar, blue spruce, Austrian pine, Washington hawthorn, Norway spruce.	Eastern white pine----	Pin oak.
164A, 164B---------- Stoy	Washington hawthorn, Amur privet, eastern redcedar, silky dogwood, Amur honeysuckle, arrowwood, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
165---------- Weir	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
173A, 173B2---------- McGary	Eastern redcedar, Washington hawthorn, Amur privet, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
176---------- Marissa	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
178---------- Ruark	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
184---------- Roby	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	Austrian pine, white fir, blue spruce, Washington hawthorn, northern whitecedar.	Norway spruce---------	Eastern white pine, pin oak.
208---------- Sexton	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
214B, 214B2, 214C2, 214C3----- Hosmer	Eastern redcedar, arrowwood, Washington hawthorn, Amur honeysuckle, Amur privet, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
231---------- Evansville	Amur honeysuckle, Amur privet, American cranberrybush, silky dogwood.	Northern whitecedar, Norway spruce, Austrian pine, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
301B---------- Grantsburg	American cranberrybush, Amur honeysuckle, arrowwood, Amur privet, Washington hawthorn, eastern redcedar.	Osage-orange, green ash, Austrian pine.	Eastern white pine, pin oak.	---
308B, 308B2, 308C2, 308C3, 308D2, 308D3----- Alford	Amur honeysuckle, American cranberrybush, Amur privet, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
337---------- Creal	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Eastern white pine, pin oak.
339F---------- Wellston	Amur honeysuckle, Amur privet, American cranberrybush, silky dogwood.	White fir, northern whitecedar, blue spruce, Washington hawthorn.	Norway spruce, Austrian pine.	Pin oak, eastern white pine.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
340C2, 340C3, 340D2, 340D3---- Zanesville	American cranberrybush, Amur honeysuckle, Tatarian honeysuckle, Amur privet, arrowwood, Washington hawthorn, eastern redcedar.	Hackberry, Osage-orange, Austrian pine.	Pin oak, eastern white pine.	---
434A, 434B, 434C2- Ridgway	Amur honeysuckle, Amur privet, silky dogwood, American cranberrybush.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
436A, 436B-------- Meadowbank	Amur honeysuckle, Amur privet, silky dogwood, American cranberrybush.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
445---------- Newhaven	Silky dogwood, Amur honeysuckle, American cranberrybush, Amur privet.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Pin oak, eastern white pine.
446---------- Springerton	Amur privet, silky dogwood, American cranberrybush, Amur honeysuckle.	White fir, northern whitecedar, blue spruce, Austrian pine, Washington hawthorn, Norway spruce.	Eastern white pine----	Pin oak.
453B---------- Muren	Amur honeysuckle, American cranberrybush, Amur privet, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
467B2, 467C2, 467C3---------- Markland	Arrowwood, Washington hawthorn, eastern redcedar, Amur honeysuckle, American cranberrybush, Amur privet.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
482B, 482B2, 482C2, 482C3----- Uniontown	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, blue spruce, northern whitecedar, white fir.	Norway spruce---------	Austrian pine, pin oak, eastern white pine.
483---------- Henshaw	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, blue spruce, northern whitecedar, white fir, Austrian pine.	Norway spruce---------	Pin oak, eastern white pine.
484---------- Harco	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, northern whitecedar, blue spruce, white fir, Austrian pine.	Norway spruce---------	Pin oak, eastern white pine.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
585F---------- Negley	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
750A, 750B, 750C2- Skelton	Amur honeysuckle, American cranberrybush, Amur privet, silky dogwood.	Northern whitecedar, white fir, Washington hawthorn, blue spruce.	Austrian pine, Norway spruce.	Eastern white pine, pin oak.
751---------- Crawleyville	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Eastern white pine, pin oak.
784F---------- Berks	Tatarian honeysuckle, Amur honeysuckle, lilac, autumn-olive, Washington hawthorn, radiant crabapple, eastern redcedar.	Jack pine, Austrian pine, red pine, eastern white pine.	---	---
802B*. Orthents				
865*. Pits				
898G*: Sylvan----------	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
Hickory----------	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
929D3*: Ava----------	Washington hawthorn, Amur privet, eastern redcedar, silky dogwood, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
Hickory----------	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
1288---------- Petrolia	Silky dogwood, Amur privet, American cranberrybush, Amur honeysuckle.	White fir, blue spruce, Washington hawthorn, Norway spruce, Austrian pine, northern whitecedar.	Eastern white pine----	Pin oak.
3092---------- Sarpy	Siberian peashrub-----	Osage-orange, northern whitecedar, white spruce, nannyberry viburnum, eastern redcedar, Washington hawthorn, green ash.	Black willow----------	Eastern cottonwood.
3103. Houghton				
3108---------- Bonnie	Silky dogwood, Amur honeysuckle, Amur privet, American cranberrybush.	White fir, blue spruce, Washington hawthorn, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
3142---------- Patton	Amur privet, silky dogwood, American cranberrybush, Amur honeysuckle.	White fir, northern whitecedar, blue spruce, Austrian pine, Washington hawthorn, Norway spruce.	Eastern white pine----	Pin oak.
3178---------- Ruark	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
3231---------- Evansville	Amur honeysuckle, Amur privet, American cranberrybush, silky dogwood.	Northern whitecedar, Norway spruce, Austrian pine, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
3302---------- Ambraw	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
3304---------- Landes	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Eastern white pine, pin oak.
3331---------- Haymond	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Eastern white pine, pin oak.

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
3333--Wakeland	Amur honeysuckle, Amur privet, American cranberrybush, silky dogwood.	Northern whitecedar, Austrian pine, white fir, blue spruce, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
3382--Belknap	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Pin oak, eastern white pine.
3420--Piopolis	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine	Pin oak.
3465--Montgomery	Silky dogwood, Amur honeysuckle, Amur privet, American cranberrybush.	Northern whitecedar, Norway spruce, Austrian pine, blue spruce, white fir, Washington hawthorn.	Eastern white pine	Pin oak.
3524--Zipp	Amur honeysuckle, silky dogwood, Amur privet, American cranberrybush.	Northern whitecedar, Norway spruce, Austrian pine, blue spruce, white fir, Washington hawthorn.	Eastern white pine	Pin oak.
3597--Armiesburg	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
3601--Nolin	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, blue spruce, northern whitecedar, white fir, Austrian pine.	Norway spruce	Pin oak, eastern white pine.
3602--Newark	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, blue spruce, northern whitecedar, white fir, Austrian pine, Norway spruce.	Eastern white pine	Pin oak.
3665--Stonelick	Siberian peashrub	Green ash, eastern redcedar, Osage-orange, northern whitecedar, nannyberry viburnum, white spruce, Washington hawthorn.	Black willow	---
7087--Dickinson	Eastern redcedar, radiant crabapple, Washington hawthorn, autumn-olive, Amur honeysuckle, lilac.	Eastern white pine, Austrian pine, red pine, jack pine.	---	---

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
7109---------- Racoon	American plum, common chokecherry.	Hackberry, eastern redcedar.	Norway spruce, green ash, golden willow, honeylocust, northern red oak, silver maple.	Eastern cottonwood.
7131A, 7131B------ Alvin	Amur privet, Washington hawthorn, Amur honeysuckle, silky dogwood.	Austrian pine, northern whitecedar, Osage-orange, eastern redcedar, American cranberrybush.	Eastern white pine, red pine, Norway spruce.	---
7142, 7142+------- Patton	Amur privet, silky dogwood, American cranberrybush, Amur honeysuckle.	White fir, northern whitecedar, blue spruce, Austrian pine, Washington hawthorn, Norway spruce.	Eastern white pine----	Pin oak.
7173A, 7173B------ McGary	Eastern redcedar, arrowwood, Washington hawthorn, Amur privet, Amur honeysuckle, American cranberrybush.	Green ash, Austrian pine, Osage-orange.	Eastern white pine, pin oak.	---
7176. Marissa				
7178---------- Ruark	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
7184---------- Roby	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	Austrian pine, white fir, blue spruce, Washington hawthorn, northern whitecedar.	Norway spruce---------	Eastern white pine, pin oak.
7208---------- Sexton	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
7434A, 7434B------ Ridgway	Amur honeysuckle, Amur privet, silky dogwood, American cranberrybush.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
7436---------- Meadowbank	Amur honeysuckle, Amur privet, silky dogwood, American cranberrybush.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
7445--Newhaven	Silky dogwood, Amur honeysuckle, American cranberrybush, Amur privet.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Pin oak, eastern white pine.
7446--Springerton	Amur privet, silky dogwood, American cranberrybush, Amur honeysuckle.	White fir, northern whitecedar, blue spruce, Austrian pine, Washington hawthorn, Norway spruce.	Eastern white pine	Pin oak.
7462A, 7462B--Sciotoville	Eastern redcedar, Washington hawthorn, Amur privet, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
7465--Montgomery	Silky dogwood, Amur honeysuckle, Amur privet, American cranberrybush.	Northern whitecedar, Norway spruce, Austrian pine, blue spruce, white fir, Washington hawthorn.	Eastern white pine	Pin oak.
7467B, 7467C--Markland	Arrowwood, Washington hawthorn, eastern redcedar, Amur honeysuckle, American cranberrybush, Amur privet.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
7482B, 7482C--Uniontown	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, blue spruce, northern whitecedar, white fir.	Norway spruce	Austrian pine, pin oak, eastern white pine.
7483--Henshaw	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, blue spruce, northern whitecedar, white fir, Austrian pine.	Norway spruce	Pin oak, eastern white pine.
7484--Harco	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, northern whitecedar, blue spruce, white fir, Austrian pine.	Norway spruce	Pin oak, eastern white pine.
7524, 7524+--Zipp	Amur honeysuckle, silky dogwood, Amur privet, American cranberrybush.	Northern whitecedar, Norway spruce, Austrian pine, blue spruce, white fir, Washington hawthorn.	Eastern white pine	Pin oak.

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
7750A, 7750B, 7750C---------- Skelton	Amur honeysuckle, American cranberrybush, Amur privet, silky dogwood.	Northern whitecedar, white fir, Washington hawthorn, blue spruce.	Austrian pine, Norway spruce.	Eastern white pine, pin oak.
7751---------- Crawleyville	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Eastern white pine, pin oak.
7787---------- Banlic	Amur privet, arrowwood, eastern redcedar, Washington hawthorn, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, green ash, Osage-orange.	Eastern white pine, pin oak.	---
7812E*. Hapludalfs				
8072---------- Sharon	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, northern whitecedar, blue spruce, white fir, Austrian pine.	Norway spruce---------	Pin oak, eastern white pine.
8460---------- Ginat	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.

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

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." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
2 Cisne	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
3A, 3B Hoyleton	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
8D2 Hickory	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
8F 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.
12 Wynoose	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
13A, 13B, 13B2 Bluford	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
14B, 14B2 Ava	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
14C2, 14C3 Ava	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: wetness.
15B Parke	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
15C2 Parke	Slight	Slight	Severe: slope.	Severe: erodes easily.	Slight.
15D2 Parke	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
19C3 Sylvan	Slight	Slight	Severe: slope.	Severe: erodes easily.	Slight.
19D3 Sylvan	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
19F Sylvan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
53B Bloomfield	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
53C Bloomfield	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
53D Bloomfield	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
75B Drury	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
87A Dickinson	Slight	Slight	Slight	Slight	Slight.
87B Dickinson	Slight	Slight	Moderate: slope.	Slight	Slight.
109 Racoon	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
131A Alvin	Slight	Slight	Slight	Slight	Slight.
131B Alvin	Slight	Slight	Moderate: slope.	Slight	Slight.
131C Alvin	Slight	Slight	Severe: slope.	Slight	Slight.
131F Alvin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
142, 142+ Patton	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
164A, 164B Stoy	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
165 Weir	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.
173A, 173B2 McGary	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
176 Marissa	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
178 Ruark	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
184 Roby	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
208 Sexton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
214B, 214B2 Hosmer	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
214C2, 214C3 Hosmer	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: wetness.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
231 Evansville	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
301B Grantsburg	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
308B, 308B2 Alford	Slight	Slight	Moderate: slope.	Slight	Slight.
308C2, 308C3 Alford	Slight	Slight	Severe: slope.	Slight	Slight.
308D2, 308D3 Alford	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
337 Creal	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
339F Wellston	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
340C2, 340C3 Zanesville	Moderate: percs slowly, wetness.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
340D2, 340D3 Zanesville	Moderate: slope, percs slowly, wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
434A Ridgway	Slight	Slight	Slight	Severe: erodes easily.	Slight.
434B Ridgway	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
434C2 Ridgway	Slight	Slight	Severe: slope.	Severe: erodes easily.	Slight.
436A Meadowbank	Slight	Slight	Slight	Slight	Slight.
436B Meadowbank	Slight	Slight	Moderate: slope.	Slight	Slight.
445 Newhaven	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
446 Springerton	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
453B Muren	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Severe: erodes easily.	Slight.
467B2 Markland	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
467C2, 467C3 Markland	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
482B, 482B2 Uniontown	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
482C2, 482C3 Uniontown	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
483 Henshaw	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
484 Harco	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
585F Negley	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
750A Skelton	Slight	Slight	Slight	Slight	Slight.
750B Skelton	Slight	Slight	Moderate: slope.	Slight	Slight.
750C2 Skelton	Slight	Slight	Severe: slope.	Slight	Slight.
751 Crawleyville	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
784F Berks	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
802B* Orthents	Slight	Slight	Moderate: slope.	Slight	Slight.
865*. Pits					
898G*: Sylvan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
929D3*: Ava	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: wetness, slope.
Hickory	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
1288 Petrolia	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3092 Sarpy					Severe: flooding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
3103--Houghton	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: wetness, flooding, excess humus.
3108--Bonnie	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3142--Patton	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3178--Ruark	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3231--Evansville	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3302--Ambraw	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
3304--Landes	Severe: flooding.	Moderate: flooding.	Slight	Moderate: flooding.	Severe: flooding.
3331--Haymond	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3333--Wakeland	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
3382--Belknap	Severe: flooding, wetness.	Moderate: flooding, wetness, percs slowly.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
3420--Piopolis	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
3465--Montgomery	Severe: flooding, ponding, too clayey.	Severe: ponding, too clayey.	Severe: too clayey, ponding, flooding.	Severe: ponding, too clayey.	Severe: ponding, flooding, too clayey.
3524--Zipp	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, percs slowly.	Severe: too clayey, ponding, flooding.	Severe: ponding, too clayey.	Severe: ponding, flooding, too clayey.
3597--Armiesburg	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
3601--Nolin	Severe: flooding.	Moderate: flooding.	Slight	Severe: erodes easily.	Severe: flooding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
3602---------- Newark	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness, erodes easily.	Severe: wetness, flooding.
3665---------- Stonelick	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
7087---------- Dickinson	Severe: flooding.	Slight----------	Slight----------	Slight----------	Slight.
7109---------- Racoon	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
7131A---------- Alvin	Severe: flooding.	Slight----------	Slight----------	Slight----------	Slight.
7131B---------- Alvin	Severe: flooding.	Slight----------	Moderate: slope.	Slight----------	Slight.
7142, 7142+---------- Patton	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
7173A, 7173B---------- McGary	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
7176---------- Marissa	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
7178---------- Ruark	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
7184---------- Roby	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
7208---------- Sexton	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
7434A---------- Ridgway	Severe: flooding.	Slight----------	Slight----------	Severe: erodes easily.	Slight.
7434B---------- Ridgway	Severe: flooding.	Slight----------	Moderate: slope.	Severe: erodes easily.	Slight.
7436---------- Meadowbank	Severe: flooding.	Slight----------	Slight----------	Slight----------	Slight.
7445---------- Newhaven	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
7446---------- Springerton	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
7462A---------- Sciotoville	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight----------	Moderate: wetness.
7462B---------- Sciotoville	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight----------	Moderate: wetness.
7465---------- Montgomery	Severe: flooding, ponding, too clayey.	Severe: ponding, too clayey.	Severe: too clayey, ponding.	Severe: ponding, too clayey.	Severe: ponding, too clayey.
7467B---------- Markland	Severe: flooding.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
7467C---------- Markland	Severe: flooding.	Moderate: percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
7482B---------- Uniontown	Severe: flooding.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Slight.
7482C---------- Uniontown	Severe: flooding.	Moderate: percs slowly.	Severe: slope.	Slight----------	Slight.
7483---------- Henshaw	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
7484---------- Harco	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
7524---------- Zipp	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, percs slowly.	Severe: too clayey, ponding.	Severe: ponding, too clayey.	Severe: ponding, too clayey.
7524+---------- Zipp	Severe: flooding, ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.
7750A---------- Skelton	Severe: flooding.	Slight----------	Slight----------	Slight----------	Slight.
7750B---------- Skelton	Severe: flooding.	Slight----------	Moderate: slope.	Slight----------	Slight.
7750C---------- Skelton	Severe: flooding.	Slight----------	Severe: slope.	Slight----------	Slight.
7751---------- Crawleyville	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
7787--Banlic	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
7812E*--Hapludalfs	Severe: flooding, slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
8072--Sharon	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
8460--Ginat	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.

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

TABLE 10.--WILDLIFE HABITAT

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

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2---- Cisne	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3A---- Hoyleton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
3B---- Hoyleton	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
8D2---- Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
8F---- 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.
12---- Wynoose	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
13A---- Bluford	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
13B, 13B2---- Bluford	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
14B, 14B2, 14C2, 14C3---- Ava	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
15B---- Parke	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
15C2---- Parke	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
15D2---- Parke	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
19C3, 19D3---- Sylvan	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
19F---- Sylvan	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
53B, 53C, 53D---- Bloomfield	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
75B---- Drury	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
87A, 87B---- Dickinson	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
109---- Racoon	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
131A, 131B--------- Alvin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
131C--------------- Alvin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
131F--------------- Alvin	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
142, 142+---------- Patton	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
164A--------------- Stoy	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
164B--------------- Stoy	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
165---------------- Weir	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
173A--------------- McGary	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
173B2-------------- McGary	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
176---------------- Marissa	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
178---------------- Ruark	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
184---------------- Roby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
208---------------- Sexton	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
214B, 214B2-------- Hosmer	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
214C2, 214C3------- Hosmer	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
231---------------- Evansville	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
301B--------------- Grantsburg	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
308B, 308B2-------- Alford	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
308C2, 308C3------- Alford	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
308D2, 308D3------- Alford	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
337---------------- Creal	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
339F---------- Wellston	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
340C2, 340C3------- Zanesville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
340D2, 340D3------- Zanesville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
434A, 434B--------- Ridgway	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
434C2---------- Ridgway	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
436A, 436B--------- Meadowbank	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
445---------- Newhaven	Good	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair.
446---------- Springerton	Fair	Fair	Good	Good	Good	Good	Good	Fair	Good	Good.
453B---------- Muren	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
467B2---------- Markland	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
467C2, 467C3------- Markland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
482B, 482B2, 482C2, 482C3---------- Uniontown	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
483---------- Henshaw	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
484---------- Harco	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
585F---------- Negley	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
750A, 750B, 750C2-- Skelton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
751---------- Crawleyville	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
784F---------- Berks	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
802B*. Orthents										
865*. Pits										

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
898G*:										
Sylvan	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Hickory	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
929D3*:										
Ava	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
1288 Petrolia	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3092 Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
3103 Houghton	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
3108 Bonnie	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3142 Patton	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
3178 Ruark	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3231 Evansville	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair.
3302 Ambraw	Good	Fair	Good	Good	Fair	Good	Good	Good	Good	Good.
3304 Landes	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
3331 Haymond	Good	Good	Fair	Good	Good	Poor	Poor	Good	Good	Poor.
3333 Wakeland	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
3382 Belknap	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
3420 Piopolis	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3465 Montgomery	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
3524 Zipp	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
3597---------- Armiesburg	Poor	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
3601---------- Nolin	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
3602---------- Newark	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
3665---------- Stonelick	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
7087---------- Dickinson	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7109---------- Racoon	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
7131A, 7131B------- Alvin	Good	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
7142, 7142+-------- Patton	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
7173A---------- McGary	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
7173B---------- McGary	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7176---------- Marissa	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
7178---------- Ruark	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
7184---------- Roby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
7208---------- Sexton	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
7434A, 7434B------- Ridgway	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
7436---------- Meadowbank	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
7445---------- Newhaven	Good	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair.
7446---------- Springerton	Fair	Fair	Good	Good	Good	Good	Good	Fair	Good	Good.
7462A---------- Sciotoville	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
7462B---------- Sciotoville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
7465--- Montgomery	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
7467B--- Markland	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7467C--- Markland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
7482B, 7482C--- Uniontown	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7483--- Henshaw	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
7484--- Harco	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
7524, 7524+--- Zipp	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
7750A, 7750B, 7750C--- Skelton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7751--- Crawleyville	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
7787--- Banlic	Fair	Good	Good	Good	Good	Fair	Good	Good	Good	Fair.
7812E*--- Hapludalfs	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
8072--- Sharon	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8460--- Ginat	Fair	Poor	Poor	Fair	Poor	Good	Good	Poor	Poor	Good.

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

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." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2---------- Cisne	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
3A, 3B---------- Hoyleton	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
8D2---------- Hickory	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
8F, 8G---------- Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
12---------- Wynoose	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
13A, 13B, 13B2---- Bluford	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
14B, 14B2--------- Ava	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Moderate: wetness.
14C2, 14C3-------- Ava	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate: wetness.
15B---------- Parke	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
15C2---------- Parke	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
15D2---------- Parke	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
19C3---------- Sylvan	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
19D3---------- Sylvan	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
19F---------- Sylvan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
53B---------- Bloomfield	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
53C---------- Bloomfield	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
53D---------- Bloomfield	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
75B---------- Drury	Slight---------	Slight---------	Slight---------	Slight---------	Severe: low strength, frost action.	Slight.
87A, 87B---------- Dickinson	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
109---------- Racoon	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
131A, 131B-------- Alvin	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
131C---------- Alvin	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
131F---------- Alvin	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
142, 142+--------- Patton	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
164A, 164B-------- Stoy	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
165---------- Weir	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
173A, 173B2------- McGary	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
176---------- Marissa	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
178---------- Ruark	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
184---------- Roby	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness, droughty.
208---------- Sexton	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
214B, 214B2------- Hosmer	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: frost action.	Moderate: wetness.
214C2, 214C3------ Hosmer	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: frost action.	Moderate: wetness.
231---------- Evansville	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
301B---------- Grantsburg	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Moderate: wetness.
308B, 308B2------- Alford	Slight----------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
308C2, 308C3------ Alford	Slight----------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
308D2, 308D3------ Alford	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
337---------- Creal	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
339F---------- Wellston	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
340C2, 340C3------ Zanesville	Moderate: depth to rock, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: low strength.	Slight.
340D2, 340D3------ Zanesville	Moderate: slope, wetness, depth to rock.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: slope.
434A, 434B-------- Ridgway	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
434C2---------- Ridgway	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
436A, 436B--------- Meadowbank	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
445---------- Newhaven	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
446---------- Springerton	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
453B---------- Muren	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
467B2, 467C2, 467C3---------- Markland	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
482B, 482B2------- Uniontown	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Severe: low strength.	Slight.
482C2, 482C3------ Uniontown	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Severe: low strength.	Slight.
483---------- Henshaw	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
484---------- Harco	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
585F---------- Negley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
750A, 750B-------- Skelton	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
750C2---------- Skelton	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
751---------- Crawleyville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
784F---------- Berks	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
802B*---------- Orthents	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
865*. Pits						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
898G*:						
Sylvan	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.
929D3*:						
Ava	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: wetness, slope.
Hickory	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
1288 Petrolia	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3092 Sarpy	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
3103 Houghton	Severe: excess humus, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, wetness, flooding.	Severe: wetness, flooding, excess humus.
3108 Bonnie	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3142 Patton	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3178 Ruark	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe: ponding, flooding.
3231 Evansville	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3302 Ambraw	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
3304 Landes	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
3331--- Haymond	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
3333--- Wakeland	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: flooding.
3382--- Belknap	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: flooding.
3420--- Piopolis	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
3465--- Montgomery	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, too clayey.
3524--- Zipp	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, too clayey.
3597--- Armiesburg	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding, frost action.	Severe: flooding.
3601--- Nolin	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding.
3602--- Newark	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
3665--- Stonelick	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
7087--- Dickinson	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
7109--- Racoon	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding.	Severe: low strength, ponding.	Severe: ponding.
7131A, 7131B--- Alvin	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
7142, 7142+--- Patton	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding.	Severe: ponding.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
7173A, 7173B---------- McGary	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
7176---------- Marissa	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, frost action.	Moderate: wetness.
7178---------- Ruark	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, frost action.	Severe: ponding.
7184---------- Roby	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Moderate: wetness, droughty.
7208---------- Sexton	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
7434A, 7434B---------- Ridgway	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, frost action.	Slight.
7436---------- Meadowbank	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, frost action.	Slight.
7445---------- Newhaven	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Moderate: wetness.
7446---------- Springerton	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, frost action.	Severe: ponding.
7462A, 7462B---------- Sciotoville	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: frost action.	Moderate: wetness.
7465---------- Montgomery	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.
7467B, 7467C---------- Markland	Moderate: too clayey, wetness.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: shrink-swell, low strength.	Slight.
7482B, 7482C---------- Uniontown	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.
7483---------- Henshaw	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: low strength.	Moderate: wetness.
7484---------- Harco	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, frost action.	Moderate: wetness.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
7524--- Zipp	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.
7524+--- Zipp	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.
7750A, 7750B, 7750C--- Skelton	Slight---	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: shrink-swell, low strength, flooding.	Slight.
7751--- Crawleyville	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Moderate: wetness.
7787--- Banlic	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Moderate: wetness.
7812E*--- Hapludalfs	Severe: slope.	Severe: flooding, slope.	Severe: flooding, slope.	Severe: flooding, slope.	Severe: slope.	Severe: slope.
8072--- Sharon	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
8460--- Ginat	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.

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

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. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2 Cisne	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
3A Hoyleton	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
3B Hoyleton	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
8D2 Hickory	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.
8F, 8G Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
12 Wynoose	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
13A Bluford	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
13B, 13B2 Bluford	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
14B, 14B2 Ava	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
14C2, 14C3 Ava	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
15B Parke	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
15C2 Parke	Slight	Severe: slope.	Slight	Slight	Good.
15D2 Parke	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
19C3 Sylvan	Slight	Severe: slope.	Slight	Slight	Good.
19D3 Sylvan	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
19F---------- Sylvan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
53B---------- Bloomfield	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
53C, 53D---------- Bloomfield	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
75B---------- Drury	Moderate: percs slowly.	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
87A, 87B---------- Dickinson	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
109---------- Racoon	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding, thin layer.
131A, 131B---------- Alvin	Slight----------	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
131C---------- Alvin	Slight----------	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
131F---------- Alvin	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, slope.
142, 142+---------- Patton	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: hard to pack, ponding.
164A---------- Stoy	Severe: wetness, percs slowly.	Slight----------	Severe: wetness.	Severe: wetness.	Poor: wetness.
164B---------- Stoy	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
165---------- Weir	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
173A---------- McGary	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
173B2---------- McGary	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
176 Marissa	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
178 Ruark	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
184 Roby	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
208 Sexton	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
214B, 214B2 Hosmer	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
214C2, 214C3 Hosmer	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
231 Evansville	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: hard to pack, ponding.
301B Grantsburg	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
308B, 308B2 Alford	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
308C2, 308C3 Alford	Slight	Severe: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
308D2, 308D3 Alford	Moderate: slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
337 Creal	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
339F Wellston	Severe: slope.	Severe: slope.	Severe: depth to rock, seepage, slope.	Severe: slope.	Poor: slope.
340C2, 340C3 Zanesville	Severe: percs slowly, wetness.	Severe: slope, wetness.	Severe: depth to rock.	Moderate: depth to rock, wetness.	Fair: too clayey, area reclaim.
340D2, 340D3 Zanesville	Severe: percs slowly, wetness.	Severe: slope, wetness.	Severe: depth to rock.	Moderate: depth to rock, slope, wetness.	Fair: slope, too clayey, area reclaim.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
434A, 434B Ridgway	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
434C2 Ridgway	Slight	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
436A, 436B Meadowbank	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
445 Newhaven	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
446 Springerton	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
453B Muren	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
467B2 Markland	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
467C2, 467C3 Markland	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
482B, 482B2 Uniontown	Moderate: wetness, percs slowly.	Moderate: wetness, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
482C2, 482C3 Uniontown	Moderate: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
483 Henshaw	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
484 Harco	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
585F Negley	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
750A Skelton	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
750B Skelton	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
750C2 Skelton	Moderate: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
751 Crawleyville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
784F---------- Berks	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
802B*---------- Orthents	Moderate: percs slowly.	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
865*. Pits					
898G*: Sylvan----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Hickory----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
929D3*: Ava----------	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Hickory----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.
1288---------- Petrolia	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3092---------- Sarpy	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.
3103---------- Houghton	Severe: subsides, flooding, wetness.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness, excess humus.
3108---------- Bonnie	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3142---------- Patton	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3178---------- Ruark	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
3231---------- Evansville	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3302---------- Ambraw	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3304---------- Landes	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.
3331---------- Haymond	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Good.
3333---------- Wakeland	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3382---------- Belknap	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3420---------- Piopolis	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
3465---------- Montgomery	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
3524---------- Zipp	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
3597---------- Armiesburg	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Poor: hard to pack.
3601---------- Nolin	Severe: flooding, wetness.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
3602---------- Newark	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3665---------- Stonelick	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Poor: seepage.
7087---------- Dickinson	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
7109---------- Racoon	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
7131A, 7131B-------- Alvin	Moderate: flooding.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: thin layer.
7142, 7142+--------- Patton	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
7173A---------- McGary	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
7173B---------- McGary	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
7176---------- Marissa	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
7178---------- Ruark	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
7184---------- Roby	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
7208---------- Sexton	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
7434A, 7434B-------- Ridgway	Moderate: flooding, percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
7436---------- Meadowbank	Moderate: flooding.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
7445---------- Newhaven	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
7446---------- Springerton	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
7462A, 7462B-------- Sciotoville	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Moderate: flooding, wetness.	Fair: too clayey, wetness.
7465---------- Montgomery	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
7467B---------- Markland	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
7467C---------- Markland	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
7482B---------- Uniontown	Moderate: flooding, wetness.	Severe: flooding.	Severe: wetness.	Moderate: flooding, wetness.	Fair: too clayey, wetness.
7482C---------- Uniontown	Moderate: flooding, wetness.	Severe: flooding, slope.	Severe: wetness.	Moderate: flooding, wetness.	Fair: too clayey, wetness.
7483---------- Henshaw	Severe: wetness, percs slowly.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.	Poor: wetness.
7484---------- Harco	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
7524, 7524+--------- Zipp	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
7750A---------- Skelton	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding, too clayey.	Moderate: flooding.	Fair: too clayey.
7750B---------- Skelton	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding, too clayey.	Moderate: flooding.	Fair: too clayey.
7750C---------- Skelton	Moderate: flooding, percs slowly.	Severe: slope.	Moderate: flooding, too clayey.	Moderate: flooding.	Fair: too clayey.
7751---------- Crawleyville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
7787---------- Banlic	Severe: wetness, percs slowly.	Slight----------	Severe: wetness.	Severe: wetness.	Poor: wetness.
7812E*---------- Hapludalfs	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
8072---------- Sharon	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
8460---------- Ginat	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

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

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. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2 Cisne	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
3A, 3B Hoyleton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
8D2 Hickory	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
8F 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.
12 Wynoose	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
13A, 13B, 13B2 Bluford	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
14B, 14B2, 14C2, 14C3- Ava	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
15B, 15C2 Parke	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
15D2 Parke	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
19C3 Sylvan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
19D3 Sylvan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
19F Sylvan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
53B, 53C, 53D Bloomfield	Good	Probable	Improbable: too sandy.	Poor: too sandy.
75B Drury	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
87A, 87B Dickinson	Good	Probable	Improbable: too sandy.	Fair: thin layer.
109 Racoon	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
131A, 131B, 131C---- Alvin	Good	Probable	Improbable: too sandy.	Poor: too sandy.
131F---- Alvin	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
142, 142+---- Patton	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
164A, 164B---- Stoy	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
165---- Weir	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
173A, 173B2---- McGary	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
176---- Marissa	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
178---- Ruark	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
184---- Roby	Fair: wetness.	Probable	Improbable: too sandy.	Poor: thin layer.
208---- Sexton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
214B, 214B2, 214C2, 214C3---- Hosmer	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
231---- Evansville	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
301B---- Grantsburg	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
308B, 308B2, 308C2---- Alford	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
308C3---- Alford	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
308D2---- Alford	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
308D3---- Alford	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
337---- Creal	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
339F---------- Wellston	Fair: area reclaim, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
340C2, 340C3, 340D2, 340D3---------- Zanesville	Severe: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
434A, 434B, 434C2----- Ridgway	Good----------	Probable----------	Improbable: too sandy.	Fair: too clayey, small stones, area reclaim.
436A, 436B---------- Meadowbank	Good----------	Probable----------	Improbable: too sandy.	Fair: small stones, area reclaim.
445---------- Newhaven	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
446---------- Springerton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
453B---------- Muren	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
467B2, 467C2, 467C3--- Markland	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
482B, 482B2, 482C2, 482C3---------- Uniontown	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
483---------- Henshaw	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
484---------- Harco	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
585F---------- Negley	Fair: slope.	Probable----------	Probable----------	Poor: small stones, slope.
750A, 750B, 750C2----- Skelton	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
751---------- Crawleyville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
784F---------- Berks	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
802B*---------- Orthents	Good----------	Improbable: excess fines.	Improbable: excess fines.	Good.
865*. Pits				

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
898G*:				
Sylvan	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Hickory	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
929D3*:				
Ava	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Hickory	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
1288 Petrolia	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3092 Sarpy	Good	Probable	Improbable: too sandy.	Poor: too sandy.
3103 Houghton	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
3108 Bonnie	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3142 Patton	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3178 Ruark	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3231 Evansville	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3302 Ambraw	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
3304 Landes	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, thin layer.
3331 Haymond	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
3333 Wakeland	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
3382--- Belknap	Fair: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
3420--- Piopolis	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3465--- Montgomery	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
3524--- Zipp	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
3597--- Armiesburg	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
3601--- Nolin	Good---	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim.
3602--- Newark	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3665--- Stonelick	Good---	Probable---	Improbable: too sandy.	Fair: small stones.
7087--- Dickinson	Good---	Probable---	Improbable: too sandy.	Fair: thin layer.
7109--- Racoon	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
7131A, 7131B--- Alvin	Good---	Probable---	Improbable: too sandy.	Fair: thin layer.
7142, 7142+--- Patton	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
7173A, 7173B--- McGary	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
7176--- Marissa	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
7178--- Ruark	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
7184--- Roby	Fair: wetness.	Probable---	Improbable: too sandy.	Poor: thin layer.
7208--- Sexton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
7434A, 7434B---------- Ridgway	Good----------	Probable----------	Improbable: too sandy.	Fair: too clayey, small stones, area reclaim.
7436---------- Meadowbank	Good----------	Probable----------	Improbable: too sandy.	Fair: small stones, area reclaim.
7445---------- Newhaven	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
7446---------- Springerton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
7462A, 7462B---------- Sciotoville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
7465---------- Montgomery	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
7467B, 7467C---------- Markland	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
7482B, 7482C---------- Uniontown	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
7483---------- Henshaw	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
7484---------- Harco	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
7524, 7524+---------- Zipp	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
7750A, 7750B, 7750C--- Skelton	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
7751---------- Crawleyville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
7787---------- Banlic	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim.
7812E*---------- Hapludalfs	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
8072---------- Sharon	Good----------	Improbable: excess fines.	Improbable: excess fines.	Good.
8460---------- Ginat	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

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

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." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
2---- Cisne	Slight	Severe: wetness.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
3A---- Hoyleton	Slight	Severe: thin layer, wetness.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
3B---- Hoyleton	Moderate: slope.	Severe: thin layer, wetness.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
8D2, 8F, 8G---- Hickory	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
12---- Wynoose	Slight	Severe: wetness.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
13A---- Bluford	Slight	Severe: piping.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
13B, 13B2---- Bluford	Moderate: slope.	Severe: piping.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
14B, 14B2, 14C2, 14C3---- Ava	Moderate: seepage, slope.	Severe: piping.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
15B, 15C2---- Parke	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
15D2---- Parke	Severe: slope.	Moderate: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
19C3---- Sylvan	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
19D3, 19F---- Sylvan	Severe: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
53B, 53C---- Bloomfield	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty, rooting depth.
53D---- Bloomfield	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.
75B---- Drury	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
87A---------- Dickinson	Severe: seepage.	Severe: seepage, piping.	Deep to water	Soil blowing---	Too sandy, soil blowing.	Favorable.
87B---------- Dickinson	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
109---------- Racoon	Slight---------	Severe: piping, ponding.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding.	Wetness, erodes easily, percs slowly.
131A---------- Alvin	Severe: seepage.	Severe: seepage, piping.	Deep to water	Soil blowing---	Soil blowing---	Favorable.
131B, 131C-------- Alvin	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, soil blowing.	Soil blowing---	Favorable.
131F---------- Alvin	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
142, 142+--------- Patton	Moderate: seepage.	Severe: hard to pack, ponding.	Ponding, frost action.	Ponding--------	Erodes easily, ponding.	Wetness, erodes easily.
164A---------- Stoy	Slight---------	Moderate: wetness.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
164B---------- Stoy	Moderate: slope.	Moderate: wetness.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
165---------- Weir	Slight---------	Severe: ponding.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
173A---------- McGary	Slight---------	Severe: wetness.	Percs slowly---	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
173B2---------- McGary	Moderate: slope.	Severe: wetness.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
176---------- Marissa	Moderate: seepage.	Severe: thin layer, wetness.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
178---------- Ruark	Moderate: seepage.	Severe: piping, ponding.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.
184---------- Roby	Severe: seepage.	Severe: seepage, piping, wetness.	Frost action, cutbanks cave.	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty, rooting depth.
208---------- Sexton	Slight---------	Severe: wetness.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
214B, 214B2, 214C2, 214C3----- Hosmer	Moderate: seepage, slope.	Severe: piping.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
231---------- Evansville	Moderate: seepage.	Severe: ponding.	Ponding, frost action.	Ponding, erodes easily.	Erodes easily, ponding.	Wetness, erodes easily.
301B---------- Grantsburg	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
308B, 308B2, 308C2, 308C3----- Alford	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
308D2, 308D3------ Alford	Severe: slope.	Moderate: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
337---------- Creal	Slight---------	Severe: thin layer, wetness.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
339F---------- Wellston	Severe: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
340C2, 340C3------ Zanesville	Moderate: depth to rock, seepage.	Severe: piping.	Percs slowly, slope.	Percs slowly, wetness, rooting depth.	Erodes easily, wetness, rooting depth.	Erodes easily, rooting depth.
340D2, 340D3------ Zanesville	Moderate: depth to rock, seepage.	Severe: piping.	Percs slowly, slope.	Percs slowly, wetness, rooting depth.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
434A---------- Ridgway	Severe: seepage.	Moderate: thin layer.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
434B, 434C2------- Ridgway	Severe: seepage.	Moderate: thin layer.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
436A---------- Meadowbank	Severe: seepage.	Moderate: thin layer.	Deep to water	Favorable------	Favorable------	Favorable.
436B---------- Meadowbank	Severe: seepage.	Moderate: thin layer.	Deep to water	Slope----------	Favorable------	Favorable.
445---------- Newhaven	Severe: seepage.	Severe: thin layer, wetness.	Frost action---	Wetness--------	Wetness--------	Wetness.
446---------- Springerton	Moderate: seepage.	Severe: piping, ponding.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.
453B---------- Muren	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Frost action, slope.	Slope, wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
467B2, 467C2, 467C3---Markland	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
482B, 482B2, 482C2, 482C3---Uniontown	Moderate: seepage.	Severe: piping.	Slope	Slope, erodes easily, wetness.	Erodes easily, wetness.	Erodes easily.
483---Henshaw	Slight	Severe: piping, wetness.	Favorable	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
484---Harco	Moderate: seepage.	Severe: thin layer, wetness.	Frost action	Wetness	Wetness	Wetness.
585F---Negley	Severe: seepage, slope.	Moderate: thin layer.	Deep to water	Slope	Slope	Slope.
750A---Skelton	Moderate: seepage.	Severe: piping.	Deep to water	Soil blowing	Soil blowing	Favorable.
750B, 750C2---Skelton	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, soil blowing.	Soil blowing	Favorable.
751---Crawleyville	Moderate: seepage.	Severe: piping, wetness.	Frost action	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
784F---Berks	Severe: seepage, slope.	Severe: thin layer.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
802B*---Orthents	Moderate: seepage, slope.	Slight	Deep to water	Slope, droughty.	Soil blowing	Droughty.
865*. Pits						
898G*: Sylvan	Severe: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Hickory	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
929D3*: Ava	Severe: slope.	Severe: piping.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Hickory	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1288--- Petrolia	Slight	Severe: ponding.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding	Wetness.
3092--- Sarpy	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty	Too sandy, soil blowing.	Droughty.
3103--- Houghton	Severe: seepage.	Severe: excess humus, wetness.	Flooding, subsides, frost action.	Wetness, soil blowing, flooding.	Wetness, soil blowing.	Wetness.
3108--- Bonnie	Slight	Severe: ponding.	Ponding, flooding, frost action.	Ponding, erodes easily, flooding.	Erodes easily, ponding.	Wetness, erodes easily.
3142--- Patton	Moderate: seepage.	Severe: ponding.	Ponding, flooding, frost action.	Ponding, flooding.	Erodes easily, ponding.	Wetness, erodes easily.
3178--- Ruark	Moderate: seepage.	Severe: piping, ponding.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding	Wetness.
3231--- Evansville	Moderate: seepage.	Severe: ponding.	Ponding, flooding, frost action.	Ponding, erodes easily, flooding.	Erodes easily, ponding.	Wetness, erodes easily.
3302--- Ambraw	Moderate: seepage.	Severe: piping, wetness.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
3304--- Landes	Severe: seepage.	Severe: seepage, piping.	Deep to water	Favorable	Too sandy, soil blowing.	Favorable.
3331--- Haymond	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
3333--- Wakeland	Moderate: seepage.	Severe: piping, wetness.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
3382--- Belknap	Moderate: seepage.	Severe: piping, wetness.	Flooding, frost action.	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
3420--- Piopolis	Slight	Severe: ponding.	Ponding, percs slowly, flooding.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
3465--- Montgomery	Slight	Severe: hard to pack, ponding.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
3524--- Zipp	Slight	Severe: ponding.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
3597--- Armiesburg	Moderate: seepage.	Moderate: hard to pack.	Deep to water	Flooding	Favorable	Favorable.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
3601---------- Nolin	Severe: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
3602---------- Newark	Moderate: seepage.	Severe: piping, wetness.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
3665---------- Stonelick	Severe: seepage.	Severe: seepage, piping.	Deep to water	Flooding-------	Too sandy------	Favorable.
7087---------- Dickinson	Severe: seepage.	Severe: seepage, piping.	Deep to water	Soil blowing---	Too sandy, soil blowing.	Favorable.
7109---------- Racoon	Slight---------	Severe: thin layer, ponding.	Ponding, percs slowly.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
7131A---------- Alvin	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing---	Favorable------	Favorable.
7131B---------- Alvin	Severe: seepage.	Severe: piping.	Deep to water	Slope, soil blowing.	Favorable------	Favorable.
7142, 7142+------- Patton	Moderate: seepage.	Severe: ponding.	Ponding, frost action.	Ponding--------	Erodes easily, ponding.	Wetness, erodes easily.
7173A---------- McGary	Slight---------	Severe: wetness.	Percs slowly---	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
7173B---------- McGary	Moderate: slope.	Severe: wetness.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
7176---------- Marissa	Moderate: seepage.	Severe: wetness.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
7178---------- Ruark	Moderate: seepage.	Severe: piping, ponding.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.
7184---------- Roby	Severe: seepage.	Severe: seepage, piping, wetness.	Frost action, cutbanks cave.	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty, rooting depth.
7208---------- Sexton	Slight---------	Severe: thin layer, wetness.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
7434A---------- Ridgway	Severe: seepage.	Moderate: thin layer.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
7434B---------- Ridgway	Severe: seepage.	Moderate: thin layer.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
7436---------- Meadowbank	Severe: seepage.	Moderate: thin layer.	Deep to water	Favorable------	Favorable------	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
7445--- Newhaven	Severe: seepage.	Severe: thin layer, wetness.	Frost action---	Wetness---	Wetness---	Wetness.
7446--- Springerton	Moderate: seepage.	Severe: piping, ponding.	Ponding, frost action.	Ponding---	Ponding---	Wetness.
7462A--- Sciotoville	Moderate: seepage.	Severe: piping.	Percs slowly, frost action.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
7462B--- Sciotoville	Moderate: seepage, slope.	Severe: piping.	Percs slowly, frost action, slope.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
7465--- Montgomery	Slight---	Severe: hard to pack, ponding.	Ponding, percs slowly.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
7467B, 7467C--- Markland	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
7482B, 7482C--- Uniontown	Moderate: seepage.	Severe: piping.	Slope---	Slope, erodes easily, wetness.	Erodes easily, wetness.	Erodes easily.
7483--- Henshaw	Slight---	Severe: piping, wetness.	Favorable---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
7484--- Harco	Moderate: seepage.	Severe: thin layer, wetness.	Frost action---	Wetness---	Wetness---	Wetness.
7524--- Zipp	Slight---	Severe: ponding.	Ponding, percs slowly.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
7524+--- Zipp	Slight---	Severe: ponding.	Ponding, percs slowly.	Ponding, percs slowly.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
7750A--- Skelton	Moderate: seepage.	Severe: piping.	Deep to water	Soil blowing---	Soil blowing---	Favorable.
7750B, 7750C--- Skelton	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, soil blowing.	Soil blowing---	Favorable.
7751--- Crawleyville	Moderate: seepage.	Severe: piping, wetness.	Frost action---	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
7787--- Banlic	Slight---	Severe: piping.	Percs slowly, frost action.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, rooting depth.
7812E*--- Hapludalfs	Severe: slope.	Severe: piping.	Deep to water	Slope---	Slope---	Slope, rooting depth.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
8072--Sharon	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
8460--Ginat	Moderate: seepage.	Severe: wetness.	Percs slowly, flooding, frost action.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.

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

TABLE 15.--ENGINEERING INDEX PROPERTIES

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

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
2---------- Cisne	0-7	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	90-100	90-100	25-35	5-10
	7-11	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	11-41	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	90-100	90-100	45-60	20-35
	41-60	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	100	90-100	70-95	50-90	30-50	15-30
3A---------- Hoyleton	0-19	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	5-15
	19-45	Silt clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	85-100	40-55	20-30
	45-60	Silt loam, loam, clay loam.	CL, CL-ML	A-6, A-7, A-4	0	0	100	95-100	90-100	70-95	20-45	5-25
3B---------- Hoyleton	0-17	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	5-15
	17-36	Silt clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	85-100	40-55	20-30
	36-60	Silt loam, loam, clay loam.	CL, CL-ML	A-6, A-7, A-4	0	0	100	95-100	90-100	70-95	20-45	5-25
8D2---------- Hickory	0-7	Loam----------	CL	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	8-15
	7-45	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
	45-60	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
8F, 8G-------- Hickory	0-5	Loam----------	CL, ML, CL-ML	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	3-15
	5-46	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
	46-60	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

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
12---------- Wynoose	0-8	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	20-35	5-15
	8-23	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	0	100	100	95-100	85-95	15-30	2-15
	23-39	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	85-95	40-55	20-35
	39-60	Silt loam, clay loam, silty clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	70-90	30-45	15-25
13A, 13B, 13B2---------- Bluford	0-8	Silt loam-----	CL, CL-ML	A-6, A-4	0	0	100	95-100	95-100	90-100	20-35	5-15
	8-18	Silt loam-----	ML, CL-ML, CL	A-4	0	0	100	95-100	95-100	90-100	20-30	NP-10
	18-37	Silty clay loam, silty clay.	CL	A-7, A-6	0	0	100	95-100	95-100	90-100	35-50	15-30
	37-60	Silt loam, loam, clay loam, silty clay loam.	CL-ML, CL	A-6, A-4	---	0-5	100	95-100	90-100	70-90	25-40	5-20
14B, 14B2, 14C2---------- Ava	0-11	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-35	5-15
	11-24	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	25-45	10-20
	24-36	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	25-45	10-20
	36-49	Silty clay loam, silt loam, loam, clay loam.	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	95-100	90-100	80-90	20-45	5-20
	49-60	Loam, silt loam, clay loam, silty clay loam.	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-90	25-40	5-20
14C3---------- Ava	0-3	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	3-8	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	25-45	10-20
	8-19	Silty clay loam, loam, clay loam.	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	95-100	90-100	80-90	20-45	5-20
	19-60	Loam, silt loam, clay loam.	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-90	25-40	5-20
15B, 15C2, 15D2---------- Parke	0-9	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	70-100	20-35	7-15
	9-38	Silty clay loam, silt loam.	CL	A-6, A-4	0	0	95-100	95-100	90-100	80-100	25-40	7-15
	38-60	Clay loam, sandy clay loam, loam, sandy loam, silt loam.	SC, CL	A-2, A-6, A-4	0	0-3	90-100	85-95	55-90	30-60	25-35	7-15

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
19C3, 19D3---- Sylvan	0-5	Silty clay loam.	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	20-30
	5-15	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
	15-60	Silt loam, silt.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-40	5-20
19F---------- Sylvan	0-3	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-8	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	100	95-100	30-40	7-15
	8-32	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
	32-60	Silt loam-----	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-40	5-20
53B---------- Bloomfield	0-10	Fine sand-----	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	60-90	4-20	---	NP
	10-22	Fine sand, loamy fine sand, sand.	SP, SM, SP-SM	A-2-4, A-3	0	0	100	100	70-100	4-35	---	NP
	22-71	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	65-100	4-35	<20	NP-3
53C, 53D------ Bloomfield	0-9	Fine sand-----	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	60-90	4-20	---	NP
	9-27	Fine sand, loamy sand, sand.	SP, SM, SP-SM	A-2-4, A-3	0	0	100	100	70-100	4-35	---	NP
	27-60	Fine sand, loamy sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	65-100	4-35	<20	NP-3
75B---------- Drury	0-10	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	95-100	90-100	20-35	NP-15
	10-42	Silt loam-----	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-35	8-15
	42-60	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
87A, 87B------ Dickinson	0-11	Fine sandy loam.	SM, SC, SC-SM	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	11-26	Fine sandy loam, sandy loam.	SM, SC, SC-SM	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	26-34	Fine sandy loam, sandy loam.	SM, SC, SC-SM	A-4	0	0	100	100	85-95	35-50	15-30	NP-10
	34-60	Sand, loamy fine sand, loamy sand.	SM, SP-SM	A-3, A-2	0	0	100	100	70-90	5-20	---	NP
109---------- Racoon	0-9	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	20-40	8-20
	9-26	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-40	5-20
	26-60	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-50	15-30

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
131A, 131B, 131C, 131F---Alvin	0-9	Fine sandy loam.	SM, ML	A-4, A-2	0	0	100	100	80-95	30-60	<25	NP-4
	9-38	Fine sandy loam, sandy loam, loam, sandy clay loam.	SM, SC, CL, ML	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	38-60	Sand, sandy loam, loamy sand.	SP, SP-SM, SM	A-2, A-3, A-1	0	0	95-100	90-100	45-95	4-35	<20	NP-4
142---Patton	0-16	Silty clay loam.	CL	A-6	0	0	100	100	95-100	80-95	30-40	15-25
	16-48	Silty clay loam.	CL, CH, ML, MH	A-7	0	0	100	100	95-100	80-100	40-55	15-25
	48-60	Stratified silt loam to silty clay loam.	CL	A-6	0	0	100	100	95-100	75-95	25-40	10-20
142+---Patton	0-18	Silt loam----	CL	A-6	0	0	100	100	95-100	75-95	25-35	10-15
	18-50	Silty clay loam.	CL, CH, ML, MH	A-7	0	0	100	100	95-100	80-100	40-55	15-25
	50-60	Stratified silt loam to silty clay loam.	CL	A-6	0	0	100	100	95-100	75-95	25-40	10-20
164A, 164B---Stoy	0-12	Silt loam----	ML, CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	12-26	Silty clay loam.	CL	A-7	0	0	100	100	95-100	90-100	40-50	22-32
	26-39	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-50	15-25
	39-60	Silt loam----	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	13-25
165---Weir	0-10	Silt loam----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	20-35	5-17
	10-20	Silt loam----	ML, CL-ML, CL	A-4	0	0	100	100	95-100	90-100	<25	3-10
	20-60	Silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-50	15-30
173A, 173B2---McGary	0-8	Silt loam----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-95	25-40	5-15
	8-39	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-100	45-60	25-35
	39-60	Stratified silty clay loam to clay.	CL, CH	A-6, A-7	0	0	95-100	95-100	95-100	85-100	35-55	20-35
176---Marissa	0-13	Silt loam----	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	13-46	Silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	46-60	Silt loam----	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	80-100	50-90	20-40	3-20

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
178---------- Ruark	0-19	Loam----------	ML, CL-ML	A-4	0	0	100	100	90-100	50-70	<25	NP-7
	19-59	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	55-70	25-40	5-15
	59-65	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, ML, CL-ML	A-4	0	0	100	90-100	90-100	40-75	<25	NP-7
184---------- Roby	0-13	Fine sandy loam.	SM, SC-SM	A-4	0	0	95-100	95-100	85-95	35-50	<25	NP-7
	13-35	Fine sandy loam, sandy loam, loam.	SM, ML	A-4, A-2	0	0	90-100	90-100	85-95	30-75	20-34	NP-7
	35-60	Stratified gravelly sand to loam.	SM, SC-SM, SP-SM, ML	A-4, A-2	0	0	80-100	75-90	50-90	10-65	<20	NP-7
208---------- Sexton	0-10	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	4-15
	10-55	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-50	15-30
	55-60	Stratified sandy loam to silty clay loam.	CL, CL-ML	A-4, A-6, A-7, A-2	0	0	100	90-100	60-90	25-90	25-45	3-20
214B, 214B2, 214C2-------- Hosmer	0-10	Silt loam-----	ML, CL-ML, CL	A-4	0	0	100	100	90-100	70-90	<25	3-10
	10-28	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-95	25-35	5-15
	28-60	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-95	20-30	5-15
214C3--------- Hosmer	0-7	Silty clay loam.	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	7-60	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-95	20-30	5-15
231---------- Evansville	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-98	20-40	3-15
	9-46	Silty clay loam, silt loam.	CL, CH	A-6, A-7	0	0	100	100	95-100	85-98	35-55	20-35
	46-66	Silty clay loam.	CL	A-6, A-7	0	0	100	100	90-100	70-98	30-45	10-25

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
301B---------- Grantsburg	0-7	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	100	90-100	30-40	7-15
	7-22	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	90-100	30-45	10-20
	22-34	Silty clay loam, silt loam.	CL, ML	A-6, A-7	0	0	100	100	100	90-100	35-50	10-25
	34-55	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	100	90-100	30-45	10-20
	55-60	Silt loam-----	ML, CL	A-4, A-6	0	0	100	100	90-100	85-100	30-40	7-15
308B, 308B2, 308C2-------- Alford	0-9	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-100	20-30	5-15
	9-60	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
308C3---------- Alford	0-5	Silty clay loam.	CL	A-6	0	0	100	100	90-100	80-100	35-40	15-20
	5-60	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
308D2---------- Alford	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-100	20-30	5-15
	8-60	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
308D3---------- Alford	0-7	Silty clay loam.	CL	A-6	0	0	100	100	90-100	80-100	35-40	15-20
	7-60	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
337---------- Creal	0-10	Silt loam-----	ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	30-40	5-15
	10-22	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	4-12
	22-49	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	0	100	100	95-100	90-100	35-50	10-25
	49-60	Silt loam-----	ML, CL	A-4, A-6	0	0	100	100	90-100	80-100	30-40	7-15
339F---------- Wellston	0-9	Silt loam-----	ML	A-4	0	0	95-100	90-100	85-100	70-95	25-35	3-10
	9-27	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	0	80-100	75-100	65-95	60-90	25-40	5-20
	27-40	Silt loam, loam, channery loam.	CL-ML, CL, SC, SC-SM	A-4, A-6	---	0-10	65-90	65-90	60-90	40-65	20-35	5-15
	40-47	Very channery loam, gravelly sandy loam, channery clay loam.	SC-SM, SC, GM-GC, CL	A-1-b, A-2, A-4, A-6	---	0-15	60-80	45-75	30-70	15-55	20-35	5-15
	47-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
340C2--- Zanesville	0-6	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	6-25	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	25-50	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	---	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	50-74	Sandy clay loam, clay loam, channery sandy clay loam, silt loam.	SC, CL, SM, GM	A-6, A-4, A-2, A-1-b	---	0-10	65-100	50-100	40-100	20-85	20-40	2-20
	74	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
340C3--- Zanesville	0-4	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	4-12	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	12-47	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	---	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	47-60	Sandy clay loam, clay loam, channery sandy clay loam.	SC, CL, SM, GM	A-6, A-4, A-2, A-1-b	---	0-10	65-100	50-100	40-100	20-85	20-40	2-20
	60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
340D2--- Zanesville	0-6	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	6-25	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	25-50	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	---	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	50-74	Sandy clay loam, clay loam, channery sandy clay loam.	SC, CL, SM, GM	A-6, A-4, A-2, A-1-b	---	0-10	65-100	50-100	40-100	20-85	20-40	2-20
	74	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
340D3--------- Zanesville	0-4	Silt loam-----	CL-ML, CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	4-12	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	12-47	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	---	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	47-60	Sandy clay loam, clay loam, channery sandy clay loam.	SC, CL, SM, GM	A-6, A-4, A-2, A-1-b	---	0-10	65-100	50-100	40-100	20-85	20-40	2-20
	60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
434A, 434B, 434C2-------- Ridgway	0-10	Silt loam-----	CL, ML, CL-ML	A-6	0	0	100	95-100	95-100	90-100	20-35	3-15
	10-30	Silty clay loam, silt loam.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-25
	30-49	Clay loam, loam, sandy loam.	CL, SC, SC-SM	A-4, A-6	0	0	90-100	85-100	80-90	35-70	20-40	3-15
	49-60	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2, A-1	0	0	75-100	50-100	20-60	5-30	---	NP
436A, 436B---- Meadowbank	0-19	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	95-100	95-100	90-100	20-35	3-15
	19-36	Silty clay loam.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-25
	36-49	Loam, sandy loam, clay loam.	CL, SC, SC-SM, ML	A-4, A-6	0	0	90-100	85-100	80-90	35-70	20-40	3-15
	49-60	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2, A-1	0	0	75-100	50-100	20-60	10-50	---	NP
445----------- Newhaven	0-15	Loam----------	CL, CL-ML	A-4	0	0	95-100	95-100	80-100	55-85	20-35	3-10
	15-40	Clay loam, loam.	CL	A-4, A-6	0	0	95-100	95-100	80-95	55-80	25-40	7-20
	40-47	Sandy loam----	SM, SC-SM, ML	A-4, A-2-4	0	0	90-100	90-100	70-90	30-55	<20	NP-4
	47-60	Loamy sand, sandy loam, sand.	SC, SM, SP-SM	A-4, A-2	0	0	90-100	85-95	60-85	10-55	<20	NP-4
446----------- Springerton	0-19	Loam----------	CL	A-4, A-6	0	0	95-100	95-100	80-100	55-85	25-35	7-17
	19-45	Clay loam, loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	80-95	55-80	25-40	4-15
	45-60	Stratified loam to sandy loam.	CL, CL-ML, SC-SM	A-4	0	0	90-100	85-95	70-90	45-85	20-30	4-10
453B---------- Muren	0-14	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-30	5-15
	14-51	Silty clay loam, silt loam.	CL	A-6, A-4	0	0	100	100	90-100	80-100	25-35	8-15
	51-60	Silt loam, silt.	CL, CL-ML, ML	A-4	0	0	100	100	90-100	70-90	<25	NP-10

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
467B2, 467C2--Markland	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	25-35	5-15
	8-39	Silty clay, clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	19-32
	39-60	Stratified clay to silty clay loam.	CL, CH, ML, MH	A-7	0	0	100	100	90-100	75-95	40-55	15-25
467C3---------Markland	0-5	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	85-95	30-45	10-20
	5-36	Silty clay, clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	19-32
	36-60	Stratified clay to silty clay loam.	CL, CH, ML, MH	A-7	0	0	100	100	90-100	75-95	40-55	15-25
482B, 482B2, 482C2--------Uniontown	0-13	Silt loam-----	ML, CL-ML, CL	A-4	0	0	100	95-100	90-100	80-100	20-35	2-10
	13-36	Silt loam, silty clay loam.	CL, ML	A-6, A-4, A-7	0	0	100	95-100	90-100	85-100	30-45	7-20
	36-60	Silt loam, silty clay loam.	ML, CL	A-4, A-6, A-7	0	0	90-100	90-100	85-100	75-100	30-45	7-20
482C3---------Uniontown	0-7	Silty clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	85-100	35-45	15-22
	7-34	Silt loam, silty clay loam.	CL, ML	A-6, A-4, A-7	0	0	100	95-100	90-100	85-100	30-45	7-20
	34-60	Silt loam, silty clay loam.	ML, CL	A-4, A-6, A-7	0	0	90-100	90-100	85-100	75-100	30-45	7-20
483-----------Henshaw	0-11	Silt loam-----	ML, CL, CL-ML	A-4	0	0	95-100	95-100	90-100	80-100	20-35	3-10
	11-44	Silty clay loam, silt loam.	CL	A-6, A-4	0	0	95-100	95-100	95-100	85-100	30-40	8-18
	44-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-100	25-40	5-15
484-----------Harco	0-19	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-35	2-13
	19-43	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-50	14-27
	43-60	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	95-100	90-100	20-35	2-13

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
585F---------- Negley	0-7	Loam----------	ML, CL-ML, CL	A-4, A-6	0	0	85-100	75-100	70-90	55-85	25-40	4-15
	7-34	Loam, gravelly clay loam, gravelly sandy loam.	SM, ML	A-4, A-2, A-6, A-7	---	0-5	70-95	50-90	35-80	20-60	25-45	3-17
	34-60	Gravelly sandy clay loam, sandy clay loam, sandy clay.	SC-SM, SC	A-2, A-4, A-7, A-6	---	0-5	70-95	50-90	40-80	25-50	20-50	5-24
750A, 750B, 750C2-------- Skelton	0-10	Fine sandy loam.	CL, CL-ML, ML	A-4	0	0	100	95-100	80-100	50-75	10-25	NP-10
	10-37	Clay loam, sandy clay loam, loam.	CL, SC, SM, ML	A-6, A-7	0	0	100	95-100	75-100	35-80	35-45	10-20
	37-60	Sandy loam, loamy sand, sand.	SP, SP-SM, SM	A-2, A-3 A-1	0	0	95-100	90-100	45-95	4-35	<20	NP-4
751---------- Crawleyville	0-15	Fine sandy loam.	CL-ML, CL, ML	A-4	0	0	100	100	60-85	50-70	<25	NP-10
	15-60	Sandy clay loam, loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	100	100	80-95	35-75	20-35	5-15
784F---------- Berks	0-1	Loam----------	CL, ML, CL-ML	A-4	0	0-10	80-100	75-100	65-85	50-75	25-36	5-10
	1-16	Channery loam, very channery loam, channery silt loam.	GM, SM, GC, SC	A-1, A-2, A-4	0	0-30	40-80	35-70	25-60	20-45	25-36	5-10
	16-32	Channery loam, very channery loam, channery silt loam.	GM, SM	A-1, A-2	0	0-40	35-65	25-55	20-40	15-35	24-38	2-10
	32-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
802B*---------- Orthents	0-60	Loam----------	CL-ML, CL, ML	A-4, A-6	0-5	---	95-100	90-100	85-95	60-90	<35	NP-15
	60-80	Variable------	---	---	---	---	---	---	---	---	---	---
865*. Pits												
898G*: Sylvan-------	0-2	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	2-19	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	100	95-100	30-40	7-15
	19-35	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
	35-60	Silt loam-----	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-40	5-20

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
898G*:												
Hickory------	0-10	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
	10-60	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
929D3*:												
Ava----------	0-3	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	3-14	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	25-45	10-20
	14-20	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	25-45	10-20
	20-46	Silty clay loam, loam, clay loam.	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	95-100	90-100	80-90	20-45	5-20
	46-60	Loam, silt loam, clay loam.	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-90	25-40	5-20
Hickory------	0-3	Clay loam-----	CL	A-6, A-7	0	0-5	95-100	90-100	80-95	70-85	30-50	15-30
	3-60	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
1288---------- Petrolia	0-6	Silty clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	80-100	30-45	10-20
	6-40	Silty clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	80-100	35-45	15-25
	40-60	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
3092---------- Sarpy	0-8	Sandy loam----	SM, SC-SM	A-4	0	0	100	100	70-90	40-60	<25	NP-5
	8-60	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	60-80	2-35	---	NP
3103---------- Houghton	0-60	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
3108---------- Bonnie	0-5	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	27-34	8-12
	5-54	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	27-34	8-12
	54-60	Silt loam, silty clay loam.	CL	A-4, A-6	0	0	100	100	90-100	80-100	25-39	8-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
3142---------- Patton	0-16	Silty clay loam.	CL	A-6	0	0	100	100	95-100	80-95	30-40	15-25
	16-48	Silty clay loam.	CL, CH, ML, MH	A-7, A-7-6	0	0	100	100	95-100	80-100	40-55	15-25
	48-60	Stratified silt loam to silty clay loam.	CL	A-6	0	0	100	100	95-100	75-95	25-40	10-20
3178---------- Ruark	0-19	Loam----------	ML, CL-ML	A-4	0	0	100	100	90-100	50-70	<25	NP-7
	19-59	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	55-70	25-40	5-15
	59-65	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, ML, CL-ML	A-4	0	0	100	90-100	90-100	40-75	<25	NP-7
3231---------- Evansville	0-9	Silt loam-----	CL	A-4, A-6	0	0	100	100	90-100	70-90	30-40	8-15
	9-46	Silt loam, silty clay loam.	CL	A-4, A-6	0	0	100	100	90-100	70-90	30-40	8-15
	46-60	Silty clay loam.	CL	A-6, A-7-6	0	0	100	100	95-100	85-95	35-45	15-25
3302---------- Ambraw	0-11	Loam----------	CL	A-6, A-7	0	0	100	100	85-95	70-95	30-45	10-20
	11-23	Clay loam, clay, silty clay loam.	CL, CH	A-6, A-7	0	0	100	100	80-90	60-80	35-55	15-30
	23-49	Clay loam, sandy clay loam.	CL	A-7, A-6	0	0	100	90-100	85-95	50-85	30-50	10-25
	49-60	Stratified silty 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
3304---------- Landes	0-19	Sandy loam----	SM, SC, SC-SM	A-4, A-2-4	0	0	100	70-100	70-95	20-50	<25	NP-10
	19-37	Loam, very fine sandy loam, loamy sand, loamy fine sand.	SM, CL-ML, SC, SC-SM	A-4, A-2-4	0	0	100	85-100	70-100	15-60	<25	NP-10
	37-60	Stratified sand to silt loam.	SM, SP-SM, SC, SC-SM	A-4, A-2-4	0	0	100	85-100	70-85	10-50	<30	NP-10
3331---------- Haymond	0-8	Silt loam-----	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10
	8-41	Silt loam-----	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10
	41-60	Fine sandy loam, silt loam, loam.	SM, ML	A-4	0	0	95-100	90-100	80-100	35-90	27-36	4-10
3333---------- Wakeland	0-10	Silt loam-----	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10
	10-60	Silt loam-----	ML	A-4	0	0	100	100	90-100	80-90	27-36	4-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
3382---------- Belknap	0-7	Silt loam-----	ML, CL, CL-ML	A-4	0	0	100	95-100	90-100	80-100	20-30	2-8
	7-60	Silt loam-----	ML, CL-ML, CL	A-4, A-6	0	0	100	95-100	90-100	80-100	20-35	NP-12
3420---------- Piopolis	0-9	Silty clay loam.	CL	A-6, A-7	0	0	100	100	90-100	75-95	35-50	15-25
	9-60	Silty clay loam.	CL	A-6, A-7	0	0	100	100	90-100	85-95	35-50	15-25
3465---------- Montgomery	0-14	Silty clay----	CH, CL	A-7	0	0	100	100	100	90-100	45-60	25-35
	14-57	Silty clay loam, silty clay.	CH	A-7	0	0	100	100	95-100	90-100	50-65	30-42
	57-60	Silt loam, silty clay loam.	CL	A-6	0	0	95-100	85-100	85-100	80-100	25-40	10-25
3524---------- Zipp	0-8	Silty clay----	CH, CL	A-7	0	0	100	100	95-100	90-95	40-55	15-30
	8-48	Silty clay----	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	25-35
	48-60	Silty clay----	CL, CH	A-7	0	0	100	100	90-100	75-95	45-60	25-35
3597---------- Armiesburg	0-21	Silty clay loam.	CL, CH	A-6, A-7	0	0	100	100	95-100	85-95	35-55	20-35
	21-60	Silty clay loam.	CL, CH	A-6, A-7	0	0	100	100	95-100	85-95	35-55	20-35
3601---------- Nolin	0-9	Silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	25-40	5-18
	9-51	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	0	100	95-100	85-100	75-100	25-46	5-23
	51-60	Loam, silt loam, gravelly loam.	ML, CL, CL-ML, GM	A-4, A-6	0	0-10	50-100	50-100	40-95	35-95	<30	NP-15
3602---------- Newark	0-10	Silty clay loam.	CL	A-6	0	0	95-100	90-100	85-100	80-95	30-40	11-20
	10-37	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7	0	0	95-100	90-100	85-100	70-100	22-42	3-20
	37-60	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7	---	0-3	75-100	70-100	65-100	55-95	22-42	3-20
3665---------- Stonelick	0-9	Loam----------	ML, CL, SM, CL-ML	A-4	0	0	85-100	75-100	60-95	45-90	20-32	2-10
	9-60	Stratified loam to sand.	SM, SP-SM	A-2, A-4, A-3, A-1-b	0	0	85-100	75-100	40-60	5-40	<15	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
7087---------- Dickinson	0-11	Fine sandy loam.	SM, SC, SC-SM	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	11-26	Fine sandy loam, sandy loam.	SM, SC, SC-SM	A-4	0	0	100	100	85-95	30-50	15-30	NP-10
	26-34	Loamy sand, loamy fine sand, fine sand.	SM, SP-SM, SC-SM	A-2, A-3	0	0	100	100	80-95	5-20	10-20	NP-5
	34-60	Sand, loamy fine sand, loamy sand.	SM, SP-SM	A-3, A-2	0	0	100	100	70-90	5-20	---	NP
7109---------- Racoon	0-9	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	20-40	8-20
	9-26	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-40	5-20
	26-60	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-50	15-30
7131A, 7131B-- Alvin	0-9	Fine sandy loam.	SM, ML	A-4, A-2	0	0	100	100	80-95	30-60	<25	NP-4
	9-38	Sandy loam, fine sandy loam.	SM, SC, ML, CL-ML	A-2, A-4, A-6	0	0	95-100	95-100	75-90	20-80	15-40	NP-15
	38-60	Sand, sandy loam, loamy sand.	SP-SM, SM	A-2, A-3, A-4	0	0	95-100	90-100	70-95	5-40	<20	NP-4
7142---------- Patton	0-16	Silty clay loam.	CL	A-6	0	0	100	100	95-100	80-95	30-40	15-25
	16-48	Silty clay loam.	CL, CH, ML, MH	A-7, A-7-6	0	0	100	100	95-100	80-100	40-55	15-25
	48-60	Stratified silt loam to silty clay loam.	CL	A-6	0	0	100	100	95-100	75-95	25-40	10-20
7142+--------- Patton	0-18	Silt loam-----	CL	A-6	0	0	100	100	95-100	75-95	25-35	10-15
	18-50	Silty clay loam.	CL, CH, ML, MH	A-7, A-7-6	0	0	100	100	95-100	80-100	40-55	15-25
	50-60	Stratified silt loam to silty clay loam.	CL	A-6	0	0	100	100	95-100	75-95	25-40	10-20
7173A, 7173B-- McGary	0-8	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	70-90	25-36	5-15
	8-39	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-100	46-58	24-32
	39-60	Stratified silty clay loam to clay.	CL, CH	A-6, A-7	0	0	95-100	95-100	95-100	85-100	38-54	20-32
7176---------- Marissa	0-13	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	13-46	Silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	46-60	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	85-100	60-90	25-40	5-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
7178---------- Ruark	0-19	Loam----------	ML, CL-ML	A-4	0	0	100	100	90-100	50-70	<25	NP-7
	19-59	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	55-70	25-40	5-15
	59-65	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, ML, CL-ML	A-4	0	0	100	90-100	90-100	40-75	<25	NP-7
7184---------- Roby	0-13	Fine sandy loam.	SM, SC-SM	A-4	0	0	95-100	95-100	85-95	35-50	<25	NP-7
	13-35	Fine sandy loam, sandy loam, loam.	SM, ML	A-4, A-2	0	0	90-100	90-100	85-95	30-75	20-34	NP-7
	35-60	Stratified gravelly sand to loam.	SM, SC-SM, SP-SM, ML	A-4, A-2	0	0	80-100	75-90	50-90	10-65	<20	NP-7
7208---------- Sexton	0-10	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	10-55	Silty clay loam, silty clay.	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-50	15-30
	55-60	Stratified sandy loam to silty clay loam.	ML, CL, SM, SC	A-4, A-2, A-6, A-7	0	0	100	90-100	60-90	25-90	25-45	3-20
7434A, 7434B-- Ridgway	0-10	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	95-100	95-100	90-100	20-35	3-15
	10-30	Silty clay loam, silt loam.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-25
	30-49	Clay loam, loam, sandy loam.	CL, SC, SC-SM, ML	A-4, A-6	0	0	90-100	85-100	80-90	35-70	20-40	3-15
	49-60	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2, A-1-b, A-3	0	0	75-100	50-100	20-60	5-30	---	NP
7436---------- Meadowbank	0-19	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	95-100	95-100	90-100	20-35	3-15
	19-36	Silty clay loam.	CL	A-6	0	0	100	95-100	95-100	90-100	30-40	15-25
	36-49	Loam, sandy loam, clay loam.	CL, SC, SC-SM, ML	A-4, A-6	0	0	90-100	85-100	80-90	35-70	20-40	3-15
	49-60	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2, A-1-b	0	0	75-100	50-100	20-60	10-50	---	NP
7445---------- Newhaven	0-15	Loam----------	CL, CL-ML	A-4	0	0	95-100	95-100	80-100	55-85	20-35	3-10
	15-40	Clay loam, loam.	CL	A-4, A-6	0	0	95-100	95-100	80-95	55-80	25-40	7-20
	40-47	Sandy loam----	SM, SC-SM, ML	A-4, A-2-4	0	0	90-100	90-100	70-90	30-55	<20	NP-4
	47-60	Loamy sand, sandy loam, sand.	SC, SM, SP-SM	A-4, A-2	0	0	90-100	85-95	60-85	10-55	<20	NP-4

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
7446---------- Springerton	0-19	Loam----------	CL	A-4, A-6	0	0	95-100	95-100	80-100	55-85	25-35	7-17
	19-45	Clay loam, loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	80-95	55-80	25-40	4-15
	45-60	Stratified loam to sandy loam.	CL, CL-ML, SC-SM	A-4	0	0	90-100	85-95	70-90	45-85	20-30	4-10
7462A, 7462B-- Sciotoville	0-21	Silt loam-----	CL-ML, ML	A-4	0	0	95-100	95-100	90-100	65-95	25-35	4-10
	21-36	Silt loam, silty clay loam, loam.	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-90	20-35	4-15
	36-54	Silt loam, silty clay loam, loam.	CL, CL-ML	A-4, A-6	---	0-5	95-100	90-100	85-100	65-90	25-40	4-18
	54-60	Stratified silty clay loam to sandy loam.	ML, CL, SM, SC	A-4, A-6	---	0-15	75-100	75-100	65-100	45-70	5-35	NP-15
7465---------- Montgomery	0-14	Silty clay----	CH, CL	A-7	0	0	100	100	100	90-100	45-60	25-35
	14-57	Silty clay loam, silty clay.	CH	A-7	0	0	100	100	95-100	90-100	50-65	30-42
	57-60	Silt loam, silty clay loam.	CL	A-6	0	0	95-100	85-100	85-100	80-100	25-40	10-25
7467B, 7467C-- Markland	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	25-35	5-15
	8-39	Silty clay, clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	19-32
	39-60	Stratified clay to silty clay loam.	CL, CH, ML, MH	A-7	0	0	100	100	90-100	75-95	40-55	15-25
7482B, 7482C-- Uniontown	0-13	Silt loam-----	ML, CL-ML, CL	A-4	0	0	100	95-100	90-100	80-100	20-35	2-10
	13-36	Silt loam, silty clay loam.	CL, ML	A-6, A-4, A-7	0	0	100	95-100	90-100	85-100	30-45	7-20
	36-60	Silt loam, silty clay loam.	ML, CL	A-4, A-6, A-7	0	0	90-100	90-100	85-100	75-100	30-45	7-20
7483---------- Henshaw	0-11	Silt loam-----	ML, CL, CL-ML	A-4	0	0	95-100	95-100	90-100	80-100	20-35	3-10
	11-44	Silty clay loam, silt loam.	CL	A-6, A-4	0	0	95-100	95-100	95-100	85-100	30-40	8-18
	44-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-100	25-40	5-15
7484---------- Harco	0-19	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-35	2-13
	19-43	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-50	14-27
	43-60	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	95-100	90-100	20-35	2-13

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
7524----------	0-8	Silty clay----	CH, CL	A-7	0	0	100	100	95-100	90-95	40-55	15-30
Zipp	8-48	Silty clay----	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	25-35
	48-60	Silty clay----	CL, CH	A-7	0	0	100	100	90-100	75-95	45-60	25-35
7524+---------	0-17	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-95	25-30	8-11
Zipp	17-60	Silty clay----	CL, CH	A-7	0	0	100	100	95-100	90-95	45-60	25-35
7750A, 7750B,												
7750C--------	0-10	Fine sandy loam.	CL, CL-ML, ML	A-4	0	0	100	95-100	80-100	50-75	10-25	NP-10
Skelton	10-37	Clay loam, sandy clay loam, loam.	CL, SC, SM, ML	A-6, A-7	0	0	100	95-100	75-100	35-80	35-45	10-20
	37-60	Sandy loam, loamy sand, sand.	SP, SP-SM, SM	A-2, A-3, A-1	0	0	95-100	90-100	45-95	4-35	<20	NP-4
7751----------	0-15	Fine sandy loam.	CL-ML, CL, ML	A-4	0	0	100	100	60-85	50-70	<25	NP-10
Crawleyville	15-60	Sandy clay loam, loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	100	100	80-95	35-75	20-35	5-15
7787----------	0-9	Silt loam-----	ML, CL, CL-ML	A-4	0	0	100	95-100	90-100	85-95	20-30	3-10
Banlic	9-24	Silt loam-----	ML, CL-ML, CL	A-4	0	0	100	95-100	90-100	85-95	20-30	3-10
	24-60	Silt loam, silt.	ML, CL-ML, CL	A-4	0	0	100	95-100	90-100	85-95	20-30	3-10
7812E*--------	0-8	Silty clay loam.	CL	A-6, A-7	0	0	95-100	95-100	90-100	85-100	30-45	15-25
Hapludalfs	8-60	Variable------	CL, CL-ML, SC-SM	A-6, A-4, A-2-4	0	0-3	90-100	80-100	60-95	30-85	20-35	NP-30
8072----------	0-34	Silt loam-----	ML, CL, CL-ML	A-4	0	0	100	100	95-100	85-95	20-30	2-10
Sharon	34-60	Silt loam, loam, sandy loam.	ML, CL, SM, SC	A-4	0	0	100	100	70-95	40-90	15-30	NP-10
8460----------	0-16	Silt loam-----	CL	A-6	0	0	100	100	90-100	70-90	25-35	10-15
Ginat	16-24	Silt loam-----	CL	A-6	0	0	100	100	90-100	70-90	25-35	10-15
	24-43	Silty clay loam.	CL	A-6, A-7	0	0	100	100	90-100	80-95	30-45	15-25
	43-60	Silty clay loam.	CL	A-6, A-7	0	0	100	100	90-100	80-95	35-50	20-30

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

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)

Soil name and map symbol	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
2	0-7	15-27	1.30-1.50	0.6-2.0	0.22-0.24	4.5-7.8	Low	0.37	3	6	1-3
Cisne	7-11	15-27	1.25-1.45	0.06-0.6	0.18-0.20	4.5-6.0	Low	0.37			
	11-41	35-45	1.40-1.60	<0.06	0.09-0.15	4.5-6.0	High	0.37			
	41-60	25-37	1.50-1.70	<0.06	0.08-0.14	5.1-6.5	Moderate	0.37			
3A	0-19	20-27	1.30-1.50	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.32	3	6	1-3
Hoyleton	19-45	35-45	1.40-1.65	0.06-0.2	0.13-0.20	4.5-6.0	High	0.43			
	45-60	15-33	1.35-1.70	0.06-0.2	0.17-0.22	5.1-7.3	Moderate	0.43			
3B	0-17	20-27	1.30-1.50	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.32	3	6	1-3
Hoyleton	17-36	35-45	1.40-1.65	0.06-0.2	0.13-0.20	4.5-6.0	High	0.43			
	36-60	15-33	1.35-1.70	0.06-0.2	0.17-0.22	5.1-7.3	Moderate	0.43			
8D2	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	7-45	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-6.0	Moderate	0.28			
	45-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low	0.28			
8F, 8G	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	5-46	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-7.3	Moderate	0.28			
	46-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low	0.28			
12	0-8	15-25	1.25-1.45	0.6-2.0	0.22-0.24	4.5-7.8	Low	0.43	3	6	.5-2
Wynoose	8-23	12-18	1.30-1.50	0.06-0.2	0.18-0.20	3.6-7.3	Low	0.43			
	23-39	35-42	1.40-1.60	<0.06	0.09-0.13	3.6-6.0	High	0.43			
	39-60	25-37	1.50-1.70	0.06-0.2	0.11-0.15	3.6-6.0	Moderate	0.43			
13A, 13B, 13B2	0-8	20-27	1.30-1.50	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.43	3	6	1-3
Bluford	8-18	15-25	1.40-1.60	0.2-0.6	0.18-0.20	3.6-6.0	Low	0.43			
	18-37	35-42	1.45-1.65	0.06-0.6	0.11-0.20	3.6-5.5	Moderate	0.43			
	37-60	22-35	1.60-1.70	0.06-0.2	0.11-0.16	3.6-6.0	Moderate	0.43			
14B, 14B2, 14C2	0-11	20-27	1.40-1.60	0.6-2.0	0.21-0.24	4.5-7.3	Low	0.43	4	6	.5-2
Ava	11-24	22-33	1.40-1.60	0.6-2.0	0.18-0.21	4.5-5.5	Moderate	0.43			
	24-36	24-35	1.50-1.70	0.2-0.6	0.18-0.21	4.5-5.5	Moderate	0.43			
	36-49	20-30	1.55-1.80	<0.06	0.09-0.11	4.5-5.5	Low	0.43			
	49-60	20-30	1.55-1.75	0.2-0.6	0.05-0.10	4.5-6.0	Low	0.43			
14C3	0-3	27-35	1.35-1.55	0.6-2.0	0.15-0.19	4.5-7.3	Moderate	0.43	3	7	.5-2
Ava	3-8	24-35	1.50-1.70	0.2-0.6	0.18-0.21	4.5-5.5	Moderate	0.43			
	8-19	20-30	1.55-1.80	<0.06	0.09-0.11	4.5-5.5	Low	0.43			
	19-60	20-30	1.55-1.75	0.2-0.6	0.05-0.10	4.5-6.0	Low	0.43			
15B, 15C2, 15D2	0-9	18-27	1.25-1.40	0.6-2.0	0.22-0.24	5.1-6.5	Low	0.37	5	6	.5-2
Parke	9-38	22-35	1.30-1.45	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.37			
	38-60	18-30	1.55-1.65	0.6-2.0	0.16-0.18	4.5-5.5	Low	0.28			
19C3, 19D3	0-5	27-32	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Moderate	0.37	4	7	<1
Sylvan	5-15	25-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.37			
	15-60	10-27	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low	0.37			
19F	0-3	18-27	1.20-1.40	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	6	1-2
Sylvan	3-8	15-25	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Low	0.37			
	8-32	25-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.37			
	32-60	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

Soil name and map symbol	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
53B	0-10	2-10	1.45-1.65	6.0-20	0.09-0.11	5.1-7.3	Low	0.15	5	1	.5-2
Bloomfield	10-22	2-10	1.45-1.65	6.0-20	0.08-0.12	5.1-7.3	Low	0.15			
	22-71	5-13	1.60-1.80	6.0-20	0.08-0.12	5.1-7.8	Low	0.15			
53C, 53D	0-9	2-10	1.45-1.65	6.0-20	0.09-0.11	5.1-7.3	Low	0.15	5	1	.5-2
Bloomfield	9-27	2-10	1.45-1.65	6.0-20	0.08-0.12	5.1-7.3	Low	0.15			
	27-60	5-13	1.60-1.80	6.0-20	0.08-0.12	5.1-7.8	Low	0.15			
75B	0-10	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	10-42	18-25	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Low	0.43			
	42-60	15-20	1.30-1.50	0.6-2.0	0.12-0.21	6.1-7.8	Low	0.43			
87A, 87B	0-11	10-18	1.50-1.55	2.0-6.0	0.12-0.15	5.6-7.3	Low	0.20	4	3	1-2
Dickinson	11-26	10-18	1.50-1.55	2.0-6.0	0.12-0.15	5.6-7.3	Low	0.20			
	26-34	10-15	1.45-1.55	2.0-6.0	0.12-0.15	5.1-6.5	Low	0.24			
	34-60	4-10	1.60-1.70	6.0-20	0.02-0.04	5.6-6.5	Low	0.15			
109	0-9	18-27	1.30-1.50	0.2-0.6	0.22-0.24	4.5-7.3	Low	0.37	3	6	1-2
Racoon	9-26	18-27	1.35-1.55	0.2-0.6	0.20-0.22	4.5-7.3	Low	0.37			
	26-60	27-35	1.35-1.60	0.06-0.2	0.18-0.20	4.5-6.0	Moderate	0.37			
131A, 131B, 131C, 131F	0-9	10-15	1.45-1.65	2.0-6.0	0.14-0.17	4.5-7.3	Low	0.24	5	3	.5-1
Alvin	9-38	15-18	1.40-1.65	6.0-2.0	0.14-0.18	4.5-7.3	Low	0.24			
	38-60	3-10	1.45-1.65	2.0-6.0	0.10-0.15	5.1-8.4	Low	0.24			
142	0-16	27-35	1.15-1.35	0.6-2.0	0.21-0.23	6.6-7.3	Moderate	0.28	5	7	3-5
Patton	16-48	27-35	1.25-1.45	0.6-2.0	0.18-0.20	6.1-7.8	Moderate	0.43			
	48-60	22-35	1.30-1.50	0.2-0.6	0.18-0.22	7.4-8.4	Moderate	0.43			
142+	0-18	22-27	1.20-1.40	0.6-2.0	0.22-0.24	6.6-7.3	Low	0.28	5	6	1-5
Patton	18-50	27-35	1.25-1.45	0.6-2.0	0.18-0.20	6.1-7.8	Moderate	0.43			
	50-60	22-35	1.30-1.50	0.2-0.6	0.18-0.22	7.4-8.4	Moderate	0.43			
164A, 164B	0-12	20-27	1.20-1.40	0.2-0.6	0.22-0.24	4.5-6.5	Low	0.43	5	6	1-2
Stoy	12-26	27-35	1.35-1.55	0.06-0.2	0.18-0.20	4.5-5.5	Moderate	0.43			
	26-39	27-35	1.55-1.75	0.06-0.2	0.09-0.12	4.5-5.5	Moderate	0.43			
	39-60	20-27	1.55-1.75	0.06-0.2	0.10-0.15	4.5-7.3	Low	0.43			
165	0-10	12-27	1.30-1.50	0.2-0.6	0.22-0.24	4.5-7.3	Low	0.43	3	6	1-3
Weir	10-20	12-20	1.40-1.55	0.06-0.2	0.17-0.20	4.5-7.3	Low	0.43			
	20-60	35-40	1.40-1.60	<0.06	0.18-0.20	4.5-6.0	High	0.43			
173A, 173B2	0-8	22-27	1.35-1.50	0.6-2.0	0.22-0.24	6.1-7.3	Low	0.43	3	6	1-4
McGary	8-39	35-50	1.60-1.70	0.06-0.2	0.11-0.13	5.6-7.8	High	0.32			
	39-60	35-50	1.55-1.65	<0.2	0.14-0.16	7.9-8.4	High	0.32			
176	0-13	22-27	1.30-1.50	0.2-2.0	0.22-0.24	6.1-7.3	Low	0.37	5	6	3-4
Marissa	13-46	30-35	1.40-1.60	0.2-2.0	0.18-0.20	6.1-7.3	Moderate	0.37			
	46-60	18-30	1.45-1.65	0.2-2.0	0.11-0.22	7.4-8.4	Low	0.37			
178	0-19	15-20	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.24	5	5	.5-2
Ruark	19-59	20-35	1.40-1.60	0.2-0.6	0.15-0.19	4.5-6.0	Low	0.24			
	59-65	10-20	1.45-1.65	0.6-2.0	0.11-0.16	5.6-7.8	Low	0.24			
184	0-13	5-15	1.20-1.40	0.6-2.0	0.12-0.15	4.5-6.5	Low	0.20	5	3	1-2
Roby	13-35	10-18	1.40-1.70	0.6-2.0	0.12-0.19	5.6-7.8	Low	0.28			
	35-60	3-15	1.50-1.85	2.0-6.0	0.04-0.17	5.6-7.8	Low	0.10			
208	0-10	18-27	1.20-1.40	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.43	5	6	1-3
Sexton	10-55	35-42	1.35-1.55	0.06-0.2	0.15-0.20	5.1-7.8	High	0.43			
	55-60	20-35	1.40-1.70	0.2-0.6	0.15-0.20	6.1-7.8	Moderate	0.43			

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	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
214B, 214B2, 214C2	0-10	10-17	1.20-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.43	4	5	1-2
Hosmer	10-28	25-35	1.30-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Moderate	0.43			
	28-60	20-30	1.60-1.70	<0.06	0.06-0.08	4.5-6.0	Low	0.43			
214C3	0-7	27-30	1.30-1.50	0.6-2.0	0.21-0.23	4.5-6.5	Moderate	0.43	3	7	.5-2
Hosmer	7-60	16-26	1.60-1.70	<0.06	0.06-0.08	4.5-6.0	Low	0.43			
231	0-9	20-26	1.30-1.45	0.6-2.0	0.20-0.24	6.1-7.3	Low	0.37	5	6	1-3
Evansville	9-46	25-34	1.40-1.55	0.6-2.0	0.18-0.20	6.1-7.8	Moderate	0.37			
	46-66	25-34	1.40-1.55	0.6-2.0	0.19-0.21	6.6-8.4	Low	0.37			
301B	0-7	13-25	1.10-1.40	0.6-2.0	0.20-0.24	3.6-7.3	Low	0.43	4	6	.5-3
Grantsburg	7-22	20-30	1.30-1.60	0.6-2.0	0.18-0.20	3.6-7.3	Moderate	0.43			
	22-34	25-35	1.50-1.70	0.2-0.6	0.06-0.08	3.6-5.5	Moderate	0.43			
	34-55	20-32	1.55-1.80	<0.06	0.08-0.10	3.6-6.0	Moderate	0.43			
	55-60	20-27	1.50-1.70	0.06-0.2	0.18-0.20	3.6-6.5	Low	0.43			
308B, 308B2, 308C2	0-9	12-26	1.25-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.37	5	5	.5-2
Alford	9-60	22-32	1.35-1.50	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.37			
308C3	0-5	27-30	1.30-1.45	0.6-2.0	0.21-0.23	4.5-7.3	Moderate	0.37	4	7	.5-2
Alford	5-60	22-32	1.35-1.50	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.37			
308D2	0-8	12-26	1.25-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.37	5	5	.5-2
Alford	8-60	22-32	1.35-1.50	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.37			
308D3	0-7	27-30	1.30-1.45	0.6-2.0	0.21-0.23	4.5-7.3	Moderate	0.37	4	7	.5-2
Alford	7-60	22-32	1.35-1.50	0.6-2.0	0.18-0.20	4.5-6.0	Moderate	0.37			
337	0-10	20-27	1.30-1.50	0.2-0.6	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Creal	10-22	18-25	1.35-1.60	0.2-0.6	0.18-0.20	3.6-7.3	Low	0.37			
	22-49	25-35	1.35-1.60	0.2-0.6	0.18-0.20	4.5-6.5	Moderate	0.37			
	49-60	20-27	1.40-1.60	0.2-0.6	0.20-0.22	4.5-7.3	Low	0.37			
339F	0-9	13-27	1.30-1.50	0.6-2.0	0.18-0.22	4.5-6.5	Low	0.37	4	6	1-3
Wellston	9-27	18-35	1.30-1.65	0.6-2.0	0.17-0.21	4.5-6.0	Low	0.37			
	27-40	15-30	1.30-1.60	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.37			
	40-47	15-30	1.30-1.60	0.6-2.0	0.06-0.16	4.5-6.0	Low	0.20			
	47-60	---	---	0.2-2.0	---	---	---	---			
340C2	0-6	12-27	1.35-1.40	0.6-2.0	0.19-0.23	4.5-7.3	Low	0.43	3	5	1-2
Zanesville	6-25	18-35	1.35-1.45	0.6-2.0	0.17-0.22	4.5-6.0	Low	0.37			
	25-50	18-33	1.50-1.75	0.06-0.6	0.08-0.12	4.5-6.0	Low	0.37			
	50-74	20-40	1.50-1.70	0.2-2.0	0.08-0.12	4.5-6.0	Low	0.28			
	74	---	---	0.0-0.2	---	---	---	---			
340C3	0-4	12-27	1.35-1.40	0.6-2.0	0.19-0.23	4.5-6.0	Low	0.43	3	5	1-2
Zanesville	4-12	18-35	1.35-1.45	0.6-2.0	0.17-0.22	4.5-6.0	Low	0.37			
	12-47	18-33	1.50-1.75	0.06-0.6	0.08-0.12	4.5-6.0	Low	0.37			
	47-60	20-40	1.50-1.70	0.2-2.0	0.08-0.12	4.5-6.0	Low	0.28			
	60	---	---	0.0-0.2	---	---	---	---			
340D2	0-6	12-27	1.35-1.40	0.6-2.0	0.19-0.23	4.5-6.0	Low	0.43	3	5	1-2
Zanesville	6-25	18-35	1.35-1.45	0.6-2.0	0.17-0.22	4.5-6.0	Low	0.37			
	25-50	18-33	1.50-1.75	0.06-0.6	0.08-0.12	4.5-6.0	Low	0.37			
	50-74	20-40	1.50-1.70	0.2-2.0	0.08-0.12	4.5-6.0	Low	0.28			
	74	---	---	0.0-0.2	---	---	---	---			

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	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
340D3----------	0-4	12-27	1.35-1.40	0.6-2.0	0.19-0.23	4.5-6.0	Low----------	0.43	3	5	1-2
Zanesville	4-12	18-35	1.35-1.45	0.6-2.0	0.17-0.22	4.5-6.0	Low----------	0.37			
	12-47	18-33	1.50-1.75	0.06-0.6	0.08-0.12	4.5-6.0	Low----------	0.37			
	47-60	20-40	1.50-1.70	0.2-2.0	0.08-0.12	4.5-6.0	Low----------	0.28			
	60	---	---	0.0-0.2	---	---	----------	----			
434A, 434B,											
434C2----------	0-10	14-27	1.15-1.35	0.6-2.0	0.22-0.24	5.1-7.3	Low----------	0.37	5	6	1-2
Ridgway	10-30	27-35	1.35-1.55	0.6-2.0	0.16-0.20	4.5-7.3	Moderate-----	0.43			
	30-49	10-30	1.45-1.65	0.6-6.0	0.11-0.18	4.5-6.5	Low----------	0.32			
	49-60	2-10	1.55-1.85	6.0-20	0.05-0.10	5.6-7.3	Low----------	0.17			
436A, 436B-------	0-19	18-27	1.15-1.35	0.6-2.0	0.22-0.24	6.1-7.3	Low----------	0.28	5	6	3-4
Meadowbank	19-36	27-35	1.35-1.55	0.6-2.0	0.16-0.19	5.6-7.3	Moderate-----	0.32			
	36-49	10-27	1.45-1.65	0.6-6.0	0.11-0.18	5.6-7.3	Low----------	0.24			
	49-60	2-10	1.55-1.85	6.0-20	0.05-0.07	5.6-7.3	Low----------	0.17			
445----------	0-15	10-27	1.40-1.60	0.6-2.0	0.20-0.24	6.6-7.3	Low----------	0.28	5	5	3-4
Newhaven	15-40	18-35	1.50-1.70	0.6-2.0	0.12-0.20	5.6-7.3	Moderate-----	0.32			
	40-47	15-18	1.55-1.75	2.0-6.0	0.10-0.14	5.6-6.5	Low----------	0.24			
	47-60	3-12	1.60-1.80	2.0-20	0.05-0.11	5.6-6.5	Low----------	0.17			
446----------	0-19	20-27	1.40-1.60	0.6-2.0	0.20-0.24	6.1-7.3	Low----------	0.28	5	6	4-6
Springerton	19-45	20-35	1.40-1.60	0.6-2.0	0.15-0.19	6.1-7.3	Moderate-----	0.32			
	45-60	18-25	1.45-1.65	0.6-2.0	0.11-0.17	6.1-7.3	Low----------	0.24			
453B----------	0-14	15-27	1.25-1.40	0.6-2.0	0.22-0.24	5.1-6.5	Low----------	0.37	5	6	.5-2
Muren	14-51	22-35	1.35-1.50	0.6-2.0	0.18-0.20	5.1-6.0	Moderate-----	0.37			
	51-60	8-20	1.30-1.45	0.6-2.0	0.20-0.22	5.6-6.5	Low----------	0.37			
467B2, 467C2-----	0-8	20-27	1.30-1.45	0.6-2.0	0.22-0.24	5.1-7.3	Low----------	0.43	3	6	1-3
Markland	8-39	40-55	1.55-1.65	0.06-0.2	0.11-0.13	5.1-7.3	High---------	0.32			
	39-60	35-50	1.55-1.70	0.06-0.2	0.09-0.11	7.4-8.4	High---------	0.32			
467C3----------	0-5	28-40	1.35-1.50	0.2-0.6	0.18-0.20	5.1-7.3	Moderate-----	0.43	2	7	1-3
Markland	5-36	40-55	1.55-1.65	0.06-0.2	0.11-0.13	5.1-7.3	High---------	0.32			
	36-60	35-50	1.55-1.70	0.06-0.2	0.09-0.11	7.4-8.4	High---------	0.32			
482B, 482B2,											
482C2----------	0-13	12-20	1.20-1.40	0.6-2.0	0.19-0.33	5.1-7.3	Low----------	0.43	4	5	.5-2
Uniontown	13-36	18-35	1.20-1.40	0.6-2.0	0.18-0.22	5.1-7.8	Low----------	0.37			
	36-60	10-30	1.20-1.40	0.2-2.0	0.18-0.22	6.6-8.4	Low----------	0.37			
482C3----------	0-7	27-35	1.20-1.40	0.6-2.0	0.18-0.22	5.1-7.3	Low----------	0.37	3	7	.5-2
Uniontown	7-34	18-35	1.20-1.40	0.6-2.0	0.18-0.22	5.1-7.8	Low----------	0.37			
	34-60	10-30	1.20-1.40	0.2-2.0	0.18-0.22	6.6-8.4	Low----------	0.37			
483----------	0-11	12-27	1.20-1.40	0.6-2.0	0.18-0.23	5.1-7.3	Low----------	0.43	4	5	.5-2
Henshaw	11-44	18-34	1.20-1.40	0.2-0.6	0.15-0.19	5.1-6.5	Low----------	0.43			
	44-60	15-34	1.20-1.40	0.2-0.6	0.17-0.22	5.6-8.4	Low----------	0.43			
484----------	0-19	20-30	1.20-1.35	0.6-2.0	0.22-0.24	6.1-7.3	Low----------	0.32	5	6	3-5
Harco	19-43	24-35	1.25-1.45	0.6-2.0	0.18-0.20	6.1-7.3	Moderate-----	0.32			
	43-60	20-27	1.30-1.50	0.6-2.0	0.20-0.22	7.4-8.4	Low----------	0.32			
585F----------	0-7	12-27	1.30-1.50	2.0-6.0	0.16-0.22	4.5-7.3	Low----------	0.32	5	5	1-3
Negley	7-34	18-35	1.30-1.60	0.6-6.0	0.10-0.16	4.5-6.5	Low----------	0.32			
	34-60	22-38	1.20-1.60	0.6-6.0	0.06-0.14	4.5-6.0	Low----------	0.32			
750A, 750B,											
750C2----------	0-10	10-20	1.30-1.45	0.6-2.0	0.16-0.18	5.1-7.3	Low----------	0.24	5	3	1-2
Skelton	10-37	27-35	1.40-1.60	0.6-2.0	0.15-0.19	4.5-6.5	Moderate-----	0.32			
	37-60	3-10	1.45-1.65	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.24			

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	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
751----------	0-15	10-20	1.30-1.45	0.6-2.0	0.16-0.18	5.6-6.5	Low----------	0.24	5	3	1-2
Crawleyville	15-60	18-30	1.40-1.65	0.6-2.0	0.16-0.19	4.5-6.0	Low----------	0.32			
784F----------	0-1	5-23	1.20-1.50	0.6-6.0	0.12-0.17	3.6-6.5	Low----------	0.24	3	5	2-4
Berks	1-16	5-32	1.20-1.60	0.6-6.0	0.04-0.10	3.6-6.5	Low----------	0.17			
	16-32	5-20	1.20-1.60	2.0-6.0	0.04-0.10	3.6-6.5	Low----------	0.17			
	32-60	---	---	0.2-20	---	---	----------	----			
802B*----------	0-60	7-18	1.50-1.70	0.6-2.0	0.08-0.14	5.6-7.3	Low----------	0.24	5	3	<1
Orthents	60-80	---	---	0.06-2.0	---	---	----------	----			
865*											
Pits											
898G*											
Sylvan----------	0-2	18-27	1.20-1.40	0.6-2.0	0.22-0.24	5.6-7.3	Low----------	0.37	5	6	1-2
	2-19	15-25	1.25-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Low----------	0.37			
	19-35	25-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.3	Moderate-----	0.37			
	35-60	18-27	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low----------	0.37			
Hickory----------	0-10	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
	10-60	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-7.3	Moderate-----	0.28			
929D3*:											
Ava----------	0-3	27-35	1.35-1.55	0.6-2.0	0.15-0.19	4.5-7.3	Moderate-----	0.43	3	7	.5-2
	3-14	22-33	1.40-1.60	0.6-2.0	0.18-0.21	4.5-5.5	Moderate-----	0.43			
	14-20	24-35	1.50-1.70	0.2-0.6	0.18-0.21	4.5-5.5	Moderate-----	0.43			
	20-46	20-30	1.55-1.80	<0.06	0.09-0.11	4.5-5.5	Low----------	0.43			
	46-60	20-30	1.55-1.75	0.2-0.6	0.05-0.10	4.5-6.0	Low----------	0.43			
Hickory----------	0-3	27-35	1.40-1.65	0.6-2.0	0.17-0.19	4.5-7.3	Moderate-----	0.37	4	6	.5-1
	3-60	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-6.0	Moderate-----	0.28			
1288----------	0-6	27-35	1.20-1.40	0.2-0.6	0.21-0.23	5.6-8.4	Moderate-----	0.32	5	7	2-3
Petrolia	6-40	27-35	1.35-1.45	0.2-0.6	0.18-0.20	6.1-7.3	Moderate-----	0.32			
	40-60	20-35	1.40-1.60	0.2-0.6	0.18-0.20	4.5-7.8	Moderate-----	0.32			
3092----------	0-8	5-10	1.20-1.40	2.0-6.0	0.09-0.13	6.6-8.4	Low----------	0.20	5	3	<1
Sarpy	8-60	2-5	1.20-1.50	>6.0	0.05-0.09	7.4-8.4	Low----------	0.15			
3103----------	0-60	---	0.15-0.45	0.2-6.0	0.35-0.45	6.1-7.3	----------	----	5	2	>70
Houghton											
3108----------	0-5	18-27	1.30-1.50	0.6-2.0	0.22-0.25	4.5-7.3	Low----------	0.43	5	6	1-3
Bonnie	5-54	18-27	1.35-1.55	0.2-0.6	0.21-0.24	4.5-5.5	Low----------	0.43			
	54-60	18-30	1.35-1.55	0.2-0.6	0.14-0.24	4.5-7.8	Low----------	0.43			
3142----------	0-16	27-35	1.15-1.35	0.6-2.0	0.21-0.23	6.6-7.3	Moderate-----	0.28	5	7	3-5
Patton	16-48	27-35	1.25-1.45	0.6-2.0	0.18-0.20	6.1-7.8	Moderate-----	0.43			
	48-60	22-35	1.30-1.50	0.2-0.6	0.18-0.22	7.4-8.4	Moderate-----	0.43			
3178----------	0-19	15-25	1.35-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low----------	0.24	5	5	5-2
Ruark	19-59	20-35	1.40-1.60	0.2-0.6	0.15-0.19	4.5-6.0	Low----------	0.24			
	59-65	10-22	1.45-1.65	0.6-2.0	0.11-0.16	5.6-7.8	Low----------	0.24			
3231----------	0-9	20-27	1.30-1.45	0.6-2.0	0.20-0.24	6.1-7.3	Low----------	0.37	5	6	1-3
Evansville	9-46	22-35	1.40-1.50	0.6-2.0	0.21-0.23	6.1-7.3	Low----------	0.37			
	46-60	27-35	1.45-1.55	0.6-2.0	0.18-0.20	6.1-7.8	Moderate-----	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	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----------	0-11	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	11-23	30-42	1.30-1.55	0.2-0.6	0.08-0.19	5.1-7.3	Moderate-----	0.32			
	23-49	24-35	1.40-1.65	0.2-2.0	0.10-0.15	5.1-7.3	Moderate-----	0.32			
	49-60	18-30	1.35-1.65	0.2-2.0	0.11-0.22	6.1-8.4	Low----------	0.43			
3304----------	0-19	7-20	1.40-1.60	2.0-6.0	0.13-0.20	5.6-8.4	Low----------	0.20	4	3	1-2
Landes	19-37	5-18	1.60-1.70	2.0-6.0	0.10-0.15	5.6-8.4	Low----------	0.32			
	37-60	5-18	1.60-1.80	6.0-20	0.05-0.15	5.6-8.4	Low----------	0.20			
3331----------	0-8	10-18	1.30-1.45	0.6-2.0	0.22-0.24	5.6-7.3	Low----------	0.37	5	5	1-3
Haymond	8-41	10-18	1.30-1.45	0.6-2.0	0.20-0.22	5.6-7.3	Low----------	0.37			
	41-60	10-18	1.30-1.45	0.6-2.0	0.20-0.22	6.1-7.3	Low----------	0.37			
3333----------	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			
3382----------	0-7	8-18	1.35-1.55	0.2-2.0	0.21-0.25	4.5-7.3	Low----------	0.37	5	5	1-3
Belknap	7-60	8-25	1.40-1.60	0.2-2.0	0.21-0.24	4.5-6.0	Low----------	0.37			
3420----------	0-9	27-35	1.20-1.40	0.06-0.2	0.21-0.23	5.1-6.5	Moderate-----	0.43	5	7	1-3
Piopolis	9-60	27-35	1.40-1.60	0.06-0.2	0.18-0.20	4.5-6.5	Moderate-----	0.43			
3465----------	0-14	40-48	1.40-1.60	0.2-0.6	0.12-0.14	6.1-7.8	High---------	0.28	5	4	3-6
Montgomery	14-57	35-50	1.40-1.65	0.06-0.2	0.11-0.18	6.1-7.8	High---------	0.28			
	57-60	23-35	1.50-1.60	0.2-0.6	0.18-0.22	7.4-8.4	Moderate-----	0.28			
3524----------	0-8	40-50	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	High---------	0.28	5	4	1-3
Zipp	8-48	40-55	1.45-1.65	0.06-0.2	0.11-0.13	5.6-7.3	High---------	0.28			
	48-60	40-55	1.50-1.70	<0.2	0.08-0.10	6.6-7.8	High---------	0.28			
3597----------	0-21	27-35	1.30-1.45	0.6-2.0	0.21-0.23	6.1-7.3	Moderate-----	0.28	5	7	2-4
Armiesburg	21-60	30-35	1.30-1.45	0.6-2.0	0.18-0.20	6.1-7.8	Moderate-----	0.28			
3601----------	0-9	27-35	1.20-1.40	0.6-2.0	0.18-0.23	5.6-8.4	Low----------	0.43	5	7	2-4
Nolin	9-51	18-35	1.25-1.50	0.6-2.0	0.18-0.23	5.6-8.4	Low----------	0.43			
	51-60	10-30	1.30-1.55	0.6-6.0	0.10-0.23	5.1-8.4	Low----------	0.43			
3602----------	0-10	27-35	1.20-1.40	0.6-2.0	0.18-0.22	5.6-7.8	Low----------	0.37	5	6	1-4
Newark	10-37	18-35	1.20-1.45	0.6-2.0	0.18-0.23	5.6-7.8	Low----------	0.43			
	37-60	12-40	1.30-1.50	0.6-2.0	0.15-0.22	5.6-7.8	Low----------	0.43			
3665----------	0-9	10-22	1.20-1.45	0.6-2.0	0.15-0.20	7.4-8.4	Low----------	0.32	5	5	1-3
Stonelick	9-60	5-18	1.30-1.55	2.0-6.0	0.08-0.14	7.4-8.4	Low----------	0.24			
7087----------	0-11	10-18	1.50-1.55	2.0-6.0	0.12-0.15	5.6-7.3	Low----------	0.20	4	3	1-2
Dickinson	11-26	10-18	1.50-1.55	2.0-6.0	0.12-0.15	5.6-7.3	Low----------	0.20			
	26-34	4-10	1.55-1.65	6.0-20	0.08-0.10	5.1-6.5	Low----------	0.20			
	34-60	4-10	1.60-1.70	6.0-20	0.02-0.04	5.6-6.5	Low----------	0.15			
7109----------	0-9	20-27	1.30-1.50	0.2-0.6	0.22-0.24	4.5-7.3	Moderate-----	0.37	3	6	1-2
Racoon	9-26	18-25	1.35-1.50	0.2-0.6	0.20-0.22	4.5-7.3	Moderate-----	0.37			
	26-60	27-35	1.35-1.60	0.06-0.2	0.18-0.20	4.5-5.5	High---------	0.37			
7131A, 7131B-----	0-9	8-15	1.45-1.65	2.0-6.0	0.14-0.18	4.5-7.3	Low----------	0.24	5	3	.5-1
Alvin	9-38	15-18	1.45-1.65	2.0-6.0	0.14-0.16	4.5-6.0	Low----------	0.24			
	38-60	3-10	1.55-1.65	2.0-6.0	0.08-0.14	5.1-8.4	Low----------	0.24			
7142----------	0-16	27-35	1.15-1.35	0.6-2.0	0.21-0.23	6.6-7.3	Moderate-----	0.28	5	7	3-5
Patton	16-48	27-35	1.25-1.45	0.6-2.0	0.18-0.20	6.1-7.8	Moderate-----	0.43			
	48-60	22-35	1.30-1.50	0.2-0.6	0.18-0.22	7.4-8.4	Moderate-----	0.43			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	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
7142+	0-18	22-27	1.20-1.40	0.6-2.0	0.22-0.24	6.6-7.3	Low	0.28	5	6	3-5
Patton	18-50	27-35	1.25-1.45	0.6-2.0	0.18-0.20	6.1-7.8	Moderate	0.43			
	50-60	22-35	1.30-1.50	0.2-0.6	0.18-0.22	7.4-8.4	Moderate	0.43			
7173A, 7173B	0-8	22-27	1.35-1.50	0.6-2.0	0.22-0.24	6.1-7.3	Low	0.43	3	6	1-4
McGary	8-39	35-50	1.60-1.70	0.06-0.2	0.11-0.13	5.6-7.8	High	0.32			
	39-60	35-50	1.55-1.65	<0.2	0.14-0.16	7.9-8.4	High	0.32			
7176	0-13	22-27	1.30-1.50	0.2-2.0	0.22-0.24	6.1-7.3	Low	0.37	5	6	3-4
Marissa	13-46	30-34	1.40-1.60	0.2-2.0	0.18-0.20	6.1-7.3	Moderate	0.37			
	46-60	18-27	1.35-1.50	0.2-2.0	0.20-0.22	7.4-8.4	Low	0.37			
7178	0-19	15-25	1.35-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.24	5	5	5-2
Ruark	19-59	20-35	1.40-1.60	0.2-0.6	0.15-0.19	4.5-6.0	Low	0.24			
	59-65	10-22	1.45-1.65	0.6-2.0	0.11-0.16	5.6-7.8	Low	0.24			
7184	0-13	5-15	1.20-1.40	0.6-2.0	0.12-0.15	4.5-6.5	Low	0.20	5	3	1-2
Roby	13-35	10-18	1.40-1.70	0.6-2.0	0.12-0.19	5.6-7.8	Low	0.28			
	35-60	3-15	1.50-1.85	2.0-6.0	0.04-0.17	5.6-7.8	Low	0.10			
7208	0-10	12-27	1.20-1.40	0.6-2.0	0.22-0.24	5.6-6.5	Low	0.43	3	6	2-3
Sexton	10-55	35-42	1.35-1.55	0.06-0.2	0.18-0.20	5.1-7.8	High	0.43			
	55-60	10-30	1.40-1.70	0.2-0.6	0.11-0.20	5.6-7.8	Low	0.43			
7434A, 7434B	0-10	14-27	1.15-1.35	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-2
Ridgway	10-30	27-35	1.35-1.55	0.6-2.0	0.16-0.20	4.5-7.3	Moderate	0.43			
	30-49	10-30	1.45-1.65	0.6-6.0	0.11-0.18	4.5-6.5	Low	0.32			
	49-60	2-10	1.55-1.85	6.0-20	0.05-0.10	5.6-7.3	Low	0.17			
7436	0-19	18-27	1.15-1.35	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.28	5	6	3-4
Meadowbank	19-36	27-35	1.35-1.55	0.6-2.0	0.16-0.19	5.1-7.3	Moderate	0.32			
	36-49	10-27	1.45-1.65	0.6-6.0	0.10-0.18	4.5-7.3	Low	0.24			
	49-60	2-10	1.55-1.80	6.0-20	0.05-0.10	5.1-7.3	Low	0.17			
7445	0-15	10-27	1.40-1.60	0.6-2.0	0.20-0.24	6.1-7.3	Low	0.28	5	5	3-4
Newhaven	15-40	18-35	1.40-1.60	0.6-2.0	0.15-0.19	4.5-7.3	Moderate	0.32			
	40-47	12-18	1.55-1.75	2.0-6.0	0.10-0.14	4.5-6.5	Low	0.24			
	47-60	3-12	1.60-1.80	2.0-20	0.05-0.10	5.6-7.3	Low	0.17			
7446	0-19	20-27	1.40-1.60	0.6-2.0	0.20-0.24	6.1-7.3	Low	0.28	5	6	4-6
Springerton	19-45	20-35	1.40-1.60	0.6-2.0	0.15-0.19	5.1-7.3	Moderate	0.32			
	45-60	15-25	1.45-1.70	0.6-2.0	0.11-0.17	5.6-7.3	Low	0.24			
7462A, 7462B	0-21	15-27	1.30-1.45	0.6-2.0	0.18-0.22	5.1-6.5	Low	0.37	4	6	1-3
Sciotoville	21-36	20-32	1.40-1.60	0.6-2.0	0.17-0.21	4.5-5.5	Low	0.37			
	36-54	20-32	1.60-1.80	0.06-0.6	0.10-0.14	4.5-6.0	Low	0.37			
	54-60	15-35	1.50-1.65	2.0-6.0	0.10-0.14	5.1-6.5	Low	0.37			
7465	0-14	40-48	1.40-1.60	0.2-0.6	0.12-0.14	6.1-7.8	High	0.28	5	4	3-6
Montgomery	14-57	35-50	1.40-1.65	0.06-0.2	0.11-0.18	6.1-7.8	High	0.28			
	57-60	23-35	1.50-1.60	0.2-0.6	0.13-0.22	7.4-8.4	Moderate	0.28			
7467B, 7467C	0-8	20-27	1.30-1.45	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.43	3	6	1-3
Markland	8-39	40-55	1.55-1.65	0.06-0.2	0.11-0.13	5.1-7.3	High	0.32			
	39-60	35-50	1.55-1.70	0.06-0.2	0.09-0.11	7.4-8.4	High	0.32			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	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
7482B, 7482C-----	0-13	12-20	1.20-1.40	0.6-2.0	0.19-0.33	5.1-7.3	Low----------	0.43	4	5	.5-2
Uniontown	13-36	18-35	1.20-1.40	0.6-2.0	0.18-0.22	5.1-7.8	Low----------	0.37			
	36-60	10-30	1.20-1.40	0.2-2.0	0.18-0.22	6.6-8.4	Low----------	0.37			
7483-----------	0-11	12-27	1.20-1.40	0.6-2.0	0.18-0.23	5.1-7.3	Low----------	0.43	4	5	.5-2
Henshaw	11-44	18-34	1.20-1.40	0.2-0.6	0.15-0.19	5.1-6.5	Low----------	0.43			
	44-60	15-34	1.20-1.40	0.2-0.6	0.17-0.22	5.6-8.4	Low----------	0.43			
7484-----------	0-19	20-30	1.20-1.35	0.6-2.0	0.22-0.24	6.1-7.3	Low----------	0.32	5	6	3-5
Harco	19-43	24-35	1.25-1.45	0.6-2.0	0.18-0.20	6.1-7.3	Moderate-----	0.32			
	43-60	20-27	1.30-1.50	0.6-2.0	0.20-0.22	7.4-8.4	Low----------	0.32			
7524-----------	0-8	40-50	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	High---------	0.28	5	4	1-3
Zipp	8-48	40-55	1.45-1.65	0.06-0.2	0.11-0.13	5.6-7.3	High---------	0.28			
	48-60	40-55	1.50-1.70	<0.2	0.08-0.10	6.6-7.8	High---------	0.28			
7524+----------	0-17	20-27	1.30-1.45	0.6-2.0	0.22-0.24	5.6-7.3	Low----------	0.37	5	6	1-3
Zipp	17-60	40-55	1.45-1.65	0.06-0.2	0.11-0.13	5.6-7.3	High---------	0.28			
7750A, 7750B,											
7750C----------	0-10	10-20	1.30-1.45	0.6-2.0	0.16-0.18	5.1-7.3	Low----------	0.24	5	3	1-2
Skelton	10-37	27-35	1.40-1.60	0.6-2.0	0.15-0.19	4.5-6.5	Moderate-----	0.32			
	37-60	3-10	1.45-1.65	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.24			
7751-----------	0-15	10-20	1.30-1.45	0.6-2.0	0.16-0.18	5.6-6.5	Low----------	0.24	5	3	1-2
Crawleyville	15-60	18-30	1.40-1.65	0.6-2.0	0.16-0.19	4.5-6.0	Low----------	0.32			
7787-----------	0-9	10-18	1.40-1.60	0.2-0.6	0.20-0.24	5.1-7.8	Low----------	0.43	4	5	.5-1
Banlic	9-24	12-18	1.40-1.60	0.06-0.2	0.20-0.22	4.5-7.3	Low----------	0.43			
	24-60	10-18	1.65-1.90	0.06-0.2	0.10-0.11	4.5-6.0	Low----------	0.43			
7812E*----------	0-8	27-35	1.35-1.60	0.06-2.0	0.18-0.20	5.1-7.3	Moderate-----	0.32	5	7	1-3
Hapludalfs	8-60	10-40	1.45-1.80	0.06-6.0	0.08-0.16	4.5-7.8	Moderate-----	----			
8072-----------	0-34	10-18	1.30-1.50	0.6-2.0	0.22-0.24	4.5-6.5	Low----------	0.37	5	5	.5-2
Sharon	34-60	5-18	1.35-1.65	0.6-2.0	0.11-0.22	4.5-5.5	Low----------	0.37			
8460-----------	0-16	20-26	1.30-1.45	0.6-2.0	0.20-0.24	4.5-7.3	Low----------	0.43	4	6	1-3
Ginat	16-24	23-26	1.40-1.60	0.6-2.0	0.20-0.22	4.5-6.5	Low----------	0.43			
	24-43	27-35	1.60-1.80	<0.06	0.06-0.08	4.5-5.5	Low----------	0.43			
	43-60	27-35	1.40-1.60	0.2-0.6	0.06-0.08	4.5-5.5	Moderate-----	0.43			

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

TABLE 17.--SOIL AND WATER FEATURES

("Flooding," "water table," and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
2---------- Cisne	D	None	---	---	0-2.0	Perched	Feb-Jun	>60	---	High	High	Moderate.
3A, 3B---------- Hoyleton	C	None	---	---	1.0-3.0	Apparent	Mar-Jun	>60	---	High	High	High.
8D2, 8F, 8G------- Hickory	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
12---------- Wynoose	D	None	---	---	0-2.0	Perched	Mar-Jun	>60	---	High	High	High.
13A, 13B, 13B2---- Bluford	C	None	---	---	1.0-3.0	Perched	Mar-Jun	>60	---	High	High	High.
14B, 14B2, 14C2, 14C3---------- Ava	C	None	---	---	1.5-3.5	Perched	Mar-Jun	>60	---	High	Moderate	High.
15B, 15C2, 15D2--- Parke	B	None	---	---	>6.0	---	---	>60	---	High	Moderate	High.
19C3, 19D3, 19F--- Sylvan	B	None	---	---	>6.0	---	---	>60	---	High	Moderate	Moderate.
53B, 53C, 53D----- Bloomfield	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
75B---------- Drury	B	None	---	---	>6.0	---	---	>60	---	High	Moderate	Moderate.
87A, 87B---------- Dickinson	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
109---------- Racoon	C/D	None	---	---	+.5-1.0	Apparent	Mar-Jun	>60	---	High	High	High.
131A, 131B, 131C, 131F---------- Alvin	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	High.
142, 142+--------- Patton	B/D	None	---	---	+.5-2.0	Apparent	Mar-Jun	>60	---	High	High	Low.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
164A, 164B-------- Stoy	C	None---------	---	---	1.0-3.0	Perched	Feb-Apr	>60	---	High-----	High-----	High.
165---------- Weir	D	None---------	---	---	+.5-2.0	Perched	Feb-Jun	>60	---	High-----	High-----	High.
173A, 173B2------- McGary	C	None---------	---	---	1.0-3.0	Apparent	Jan-Apr	>60	---	Moderate	High-----	Low.
176---------- Marissa	C	None---------	---	---	1.0-3.0	Apparent	Feb-Jun	>60	---	High-----	High-----	Low.
178---------- Ruark	B/D	None---------	---	---	+.5-2.0	Apparent	Mar-Jul	>60	---	High-----	High-----	High.
184---------- Roby	C	None---------	---	---	1.0-3.0	Apparent	Mar-Jun	>60	---	High-----	Moderate	High.
208---------- Sexton	C/D	None---------	---	---	0-2.0	Apparent	Jan-Jun	>60	---	High-----	High-----	Moderate.
214B, 214B2, 214C2, 214C3----- Hosmer	C	None---------	---	---	1.5-3.0	Perched	Mar-Apr	>60	---	High-----	Moderate	High.
231---------- Evansville	B/D	None---------	---	---	+.5-1.0	Apparent	Jan-May	>60	---	High-----	High-----	Low.
301B---------- Grantsburg	C	None---------	---	---	1.5-3.5	Perched	Feb-Apr	>60	---	High-----	High-----	High.
308B, 308B2, 308C2, 308C3, 308D2, 308D3----- Alford	B	None---------	---	---	>6.0	---	---	>60	---	High-----	Moderate	High.
337---------- Creal	C	None---------	---	---	1.0-3.0	Apparent	Feb-May	>60	---	High-----	High-----	High.
339F---------- Wellston	B	None---------	---	---	>6.0	---	---	40-72	Hard	High-----	Moderate	High.
340C2, 340C3, 340D2, 340D3----- Zanesville	C	None---------	---	---	2.0-3.0	Perched	Dec-Apr	40-80	Hard	---	Moderate	High.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
434A, 434B, 434C2-Ridgway	B	None	---	---	>6.0	---	---	>60	---	High	Low	Moderate.
436A, 436B-Meadowbank	B	None	---	---	>6.0	---	---	>60	---	High	Moderate	Moderate.
445-Newhaven	B	None	---	---	1.0-3.0	Apparent	Feb-Jun	>60	---	High	High	Moderate.
446-Springerton	B/D	None	---	---	+.5-2.0	Apparent	Feb-Jun	>60	---	High	High	Low.
453B-Muren	B	None	---	---	2.0-6.0	Apparent	Mar-Apr	>60	---	High	High	Moderate.
467B2, 467C2, 467C3-Markland	C	None	---	---	3.0-6.0	Apparent	Dec-Apr	>60	---	Moderate	High	Moderate.
482B, 482B2, 482C2, 482C3-Uniontown	B	None	---	---	2.5-6.0	Apparent	Nov-May	>60	---	High	Low	Moderate.
483-Henshaw	C	None	---	---	1.0-2.0	Apparent	Nov-Mar	>60	---	High	High	Moderate.
484-Harco	B	None	---	---	1.0-3.0	Apparent	Feb-Apr	>60	---	High	High	Low.
585F-Negley	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	High.
750A, 750B, 750C2-Skelton	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
751-Crawleyville	B	None	---	---	1.0-3.0	Apparent	Dec-May	>60	---	High	High	High.
784F-Berks	C	None	---	---	>6.0	---	---	20-40	Soft	Low	Low	High.
802B*-Orthents	---	None	---	---	4.0-6.0	Apparent	Mar-May	>60	---	Moderate	---	---
865*. Pits												

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
898G*:												
Sylvan	B	None	---	---	>6.0	---	---	>60	---	High	Moderate	Moderate.
Hickory	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
929D3*:												
Ava	C	None	---	---	1.5-3.5	Perched	Mar-Jun	>60	---	High	Moderate	High.
Hickory	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
1288 Petrolia	C/D	Frequent	Very long	Mar-Jun	+.5-3.0	Apparent	Apr-Jun	>60	---	High	High	Low.
3092 Sarpy	A	Frequent	Brief	Nov-Jun	>6.0	---	---	>60	---	Low	Low	Low.
3103 Houghton	A/D	Frequent	Very long	Oct-May	0-1.0	Apparent	Sep-Jun	>60	---	High	High	Low.
3108 Bonnie	C/D	Frequent	Brief	Jan-Jun	+.5-1.0	Apparent	Jan-Jun	>60	---	High	High	High.
3142 Patton	B/D	Frequent	Brief	Dec-May	+.5-2.0	Apparent	Mar-Jun	>60	---	High	High	Low.
3178 Ruark	B/D	Frequent	Brief	Dec-May	+.5-2.0	Apparent	Mar-Jul	>60	---	High	High	High.
3231 Evansville	B/D	Frequent	Brief	Dec-Apr	+.5-1.0	Apparent	Jan-May	>60	---	High	High	Low.
3302 Ambraw	B/D	Frequent	Long	Mar-Jun	0-2.0	Apparent	Mar-Jun	>60	---	High	High	Moderate.
3304 Landes	B	Frequent	Brief	Jan-Jun	>6.0	---	---	>60	---	Moderate	Low	Low.
3331 Haymond	B	Frequent	Brief	Jan-May	>6.0	---	---	>60	---	High	Low	Low.
3333 Wakeland	C	Frequent	Brief	Jan-May	1.0-3.0	Apparent	Jan-Apr	>60	---	High	High	Low.
3382 Belknap	C	Frequent	Brief	Jan-Jun	1.0-3.0	Apparent	Jan-Jun	>60	---	High	High	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
3420--- Piopolis	C/D	Frequent	Long	Mar-Jun	+.5-3.0	Apparent	Mar-Jun	>60	---	High	High	Moderate.
3465--- Montgomery	D	Frequent	Brief	Dec-May	+1-1.0	Apparent	Dec-May	>60	---	High	High	Low.
3524--- Zipp	D	Frequent	Brief	Dec-May	+.5-1.0	Apparent	Dec-May	>60	---	Moderate	High	Low.
3597--- Armiesburg	B	Frequent	Brief	Oct-Jun	>6.0	---	---	>60	---	High	Moderate	Low.
3601--- Nolin	B	Frequent	Brief	Feb-May	>6.0	---	---	>60	---	High	Low	Moderate.
3602--- Newark	C	Frequent	Long	Jan-Apr	0.5-1.5	Apparent	Dec-May	>60	---	High	High	Low.
3665--- Stonelick	B	Frequent	Brief	Nov-Jun	>6.0	---	---	>60	---	Moderate	Low	Low.
7087--- Dickinson	B	Rare	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
7109--- Racoon	C/D	Rare	---	---	+.5-1.0	Apparent	Mar-Jun	>60	---	High	High	High.
7131A, 7131B--- Alvin	B	Rare	---	---	>6.0	---	---	>60	---	Moderate	Low	High.
7142, 7142+--- Patton	B/D	Rare	---	---	+.5-2.0	Apparent	Mar-Jun	>60	---	High	High	Low.
7173A, 7173B--- McGary	C	Rare	---	---	1.0-3.0	Apparent	Jan-Apr	>60	---	Moderate	High	Low.
7176--- Marissa	C	Rare	---	---	1.0-3.0	Apparent	Feb-Jun	>60	---	High	High	Low.
7178--- Ruark	B/D	Rare	---	---	+.5-2.0	Apparent	Mar-Jul	>60	---	High	High	High.
7184--- Roby	C	Rare	---	---	1.0-3.0	Apparent	Mar-Jun	>60	---	High	Moderate	High.
7208--- Sexton	C/D	Rare	---	---	0-2.0	Apparent	Mar-Jun	>60	---	High	High	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
7434A, 7434B---------- Ridgway	B	Rare---------	---	---	>6.0	---	---	>60	---	High-----	Low------	Moderate.
7436---------- Meadowbank	B	Rare---------	---	---	>6.0	---	---	>60	---	High-----	Moderate	Moderate.
7445---------- Newhaven	B	Rare---------	---	---	1.0-3.0	Apparent	Feb-Jun	>60	---	High-----	High-----	Moderate.
7446---------- Springerton	B/D	Rare---------	---	---	+.5-2.0	Apparent	Feb-Jun	>60	---	High-----	High-----	Low.
7462A, 7462B------ Sciotoville	C	Rare---------	---	---	1.5-3.0	Perched	Nov-Mar	>60	---	High-----	Moderate	High.
7465---------- Montgomery	D	Rare---------	---	---	+1-1.0	Apparent	Dec-May	>60	---	High-----	High-----	Low.
7467B, 7467C------ Markland	C	Rare---------	---	---	3.0-6.0	Apparent	Dec-Apr	>60	---	Moderate	High-----	Moderate.
7482B, 7482C------ Uniontown	B	Rare---------	---	---	2.5-6.0	Apparent	Nov-May	>60	---	High-----	Low------	Moderate.
7483---------- Henshaw	C	Rare---------	---	---	1.0-2.0	Apparent	Nov-Mar	>60	---	High-----	High-----	Moderate.
7484---------- Harco	B	Rare---------	---	---	1.0-3.0	Apparent	Feb-Apr	>60	---	High-----	High-----	Low.
7524, 7524+------- Zipp	D	Rare---------	---	---	+.5-1.0	Apparent	Dec-May	>60	---	Moderate	High-----	Low.
7750A, 7750B, 7750C---------- Skelton	B	Rare---------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
7751---------- Crawleyville	B	Rare---------	---	---	1.0-3.0	Apparent	Dec-May	>60	---	High-----	High-----	High.
7787---------- Banlic	C	Rare---------	---	---	1.0-3.0	Perched	Jan-Jun	>60	---	High-----	High-----	High.
7812E*---------- Hapludalfs	B	Rare---------	---	---	>6.0	---	---	>60	---	High-----	Moderate	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
8072---------- Sharon	B	Occasional	Brief-----	Mar-Jun	3.0-6.0	Apparent	Mar-Jun	>60	---	High-----	Low------	High.
8460---------- Ginat	D	Occasional	Brief-----	Dec-May	0-1.0	Perched	Jan-May	>60	---	High-----	High-----	High.

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

TABLE 18.--CLASSIFICATION OF THE SOILS

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

Soil name	Family or higher taxonomic class
Alford	Fine-silty, mixed, mesic Typic Hapludalfs
Alvin	Coarse-loamy, mixed, mesic Typic Hapludalfs
Ambraw	Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls
Armiesburg	Fine-silty, mixed, mesic Fluventic Hapludolls
Ava	Fine-silty, mixed, mesic Typic Fragiudalfs
Banlic	Coarse-silty, mixed, nonacid, mesic Aeric Haplaquepts
Belknap	Coarse-silty, mixed, acid, mesic Aeric Fluvaquents
Berks	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Bloomfield	Sandy, mixed, mesic Psammentic Hapludalfs
Bluford	Fine, montmorillonitic, mesic Aeric Ochraqualfs
Bonnie	Fine-silty, mixed, acid, mesic Typic Fluvaquents
Cisne	Fine, montmorillonitic, mesic Mollic Albaqualfs
Crawleyville	Fine-loamy, mixed, mesic Aeric Ochraqualfs
Creal	Fine-silty, mixed, mesic Aeric Ochraqualfs
Dickinson	Coarse-loamy, mixed, mesic Typic Hapludolls
Drury	Fine-silty, mixed, mesic Dystric Eutrochrepts
Evansville	Fine-silty, mixed, nonacid, mesic Typic Haplaquepts
Ginat	Fine-silty, mixed, mesic Typic Fragiaqualfs
Grantsburg	Fine-silty, mixed, mesic Typic Fragiudalfs
Hapludalfs	Typic Hapludalfs
Harco	Fine-silty, mixed, mesic Aquic Argiudolls
*Haymond	Coarse-silty, mixed, mesic Dystric Eutrochrepts
Henshaw	Fine-silty, mixed, mesic Aquic Hapludalfs
Hickory	Fine-loamy, mixed, mesic Typic Hapludalfs
Hosmer	Fine-silty, mixed, mesic Typic Fragiudalfs
Houghton	Euic, mesic Typic Medisaprists
Hoyleton	Fine, montmorillonitic, mesic Aquollic Hapludalfs
Landes	Coarse-loamy, mixed, mesic Fluventic Hapludolls
Marissa	Fine-silty, mixed, mesic Argiaquic Argialbolls
Markland	Fine, mixed, mesic Typic Hapludalfs
McGary	Fine, mixed, mesic Aeric Ochraqualfs
Meadowbank	Fine-silty, mixed, mesic Typic Argiudolls
*Montgomery	Fine, mixed, mesic Typic Haplaquolls
Muren	Fine-silty, mixed, mesic Aquic Hapludalfs
Negley	Fine-loamy, mixed, mesic Typic Paleudalfs
Newark	Fine-silty, mixed, nonacid, mesic Aeric Fluvaquents
Newhaven	Fine-loamy, mixed, mesic Aquic Argiudolls
Nolin	Fine-silty, mixed, mesic Dystric Fluventic Eutrochrepts
Orthents	Orthents
Parke	Fine-silty, mixed, mesic Ultic Hapludalfs
Patton	Fine-silty, mixed, mesic Typic Haplaquolls
Petrolia	Fine-silty, mixed, nonacid, mesic Typic Fluvaquents
Piopolis	Fine-silty, mixed, acid, mesic Typic Fluvaquents
Racoon	Fine-silty, mixed, mesic Typic Ochraqualfs
Ridgway	Fine-silty, mixed, mesic Typic Hapludalfs
Roby	Coarse-loamy, mixed, mesic Aquic Hapludalfs
Ruark	Fine-loamy, mixed, mesic Typic Ochraqualfs
Sarpy	Mixed, mesic Typic Udipsamments
Sciotoville	Fine-silty, mixed, mesic Aquic Fragiudalfs
Sexton	Fine, montmorillonitic, mesic Typic Ochraqualfs
Sharon	Coarse-silty, mixed, acid, mesic Typic Udifluvents
Skelton	Fine-loamy, mixed, mesic Typic Hapludalfs
Springerton	Fine-loamy, mixed, mesic Typic Haplaquolls
Stonelick	Coarse-loamy, mixed (calcareous), mesic Typic Udifluvents
Stoy	Fine-silty, mixed, mesic Aquic Hapludalfs
Sylvan	Fine-silty, mixed, mesic Typic Hapludalfs
Uniontown	Fine-silty, mixed, mesic Typic Hapludalfs
Wakeland	Coarse-silty, mixed, nonacid, mesic Aeric Fluvaquents
Weir	Fine, montmorillonitic, mesic Typic Ochraqualfs
Wellston	Fine-silty, mixed, mesic Ultic Hapludalfs

TABLE 18.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Wynoose	Fine, montmorillonitic, mesic Typic Albaqualfs
Zanesville	Fine-silty, mixed, mesic Typic Fragiudalfs
Zipp	Fine, mixed, nonacid, mesic Typic Haplaquepts

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