

The background of the page is a topographic map with red contour lines on a dark red background. A dashed red line runs vertically through the center. A red 'x' is located in the middle of the map, and a solid red dot is located in the lower-left quadrant.

# Appendix C

## Soil Maps



United States  
Department of  
Agriculture

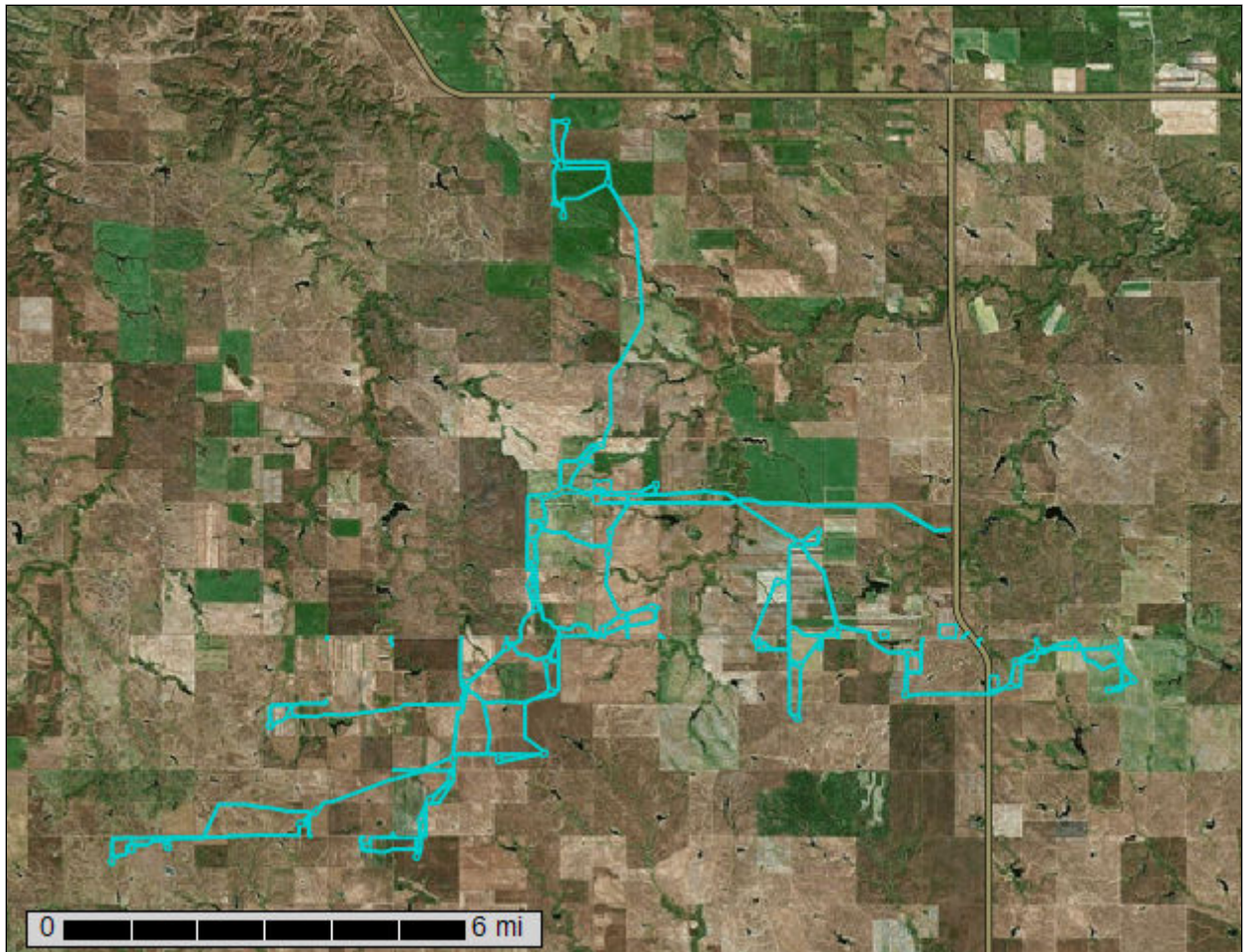
**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for **Haakon County, South Dakota**

**Philip Wind**



# Preface

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

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

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

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

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

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

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

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

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

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

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

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

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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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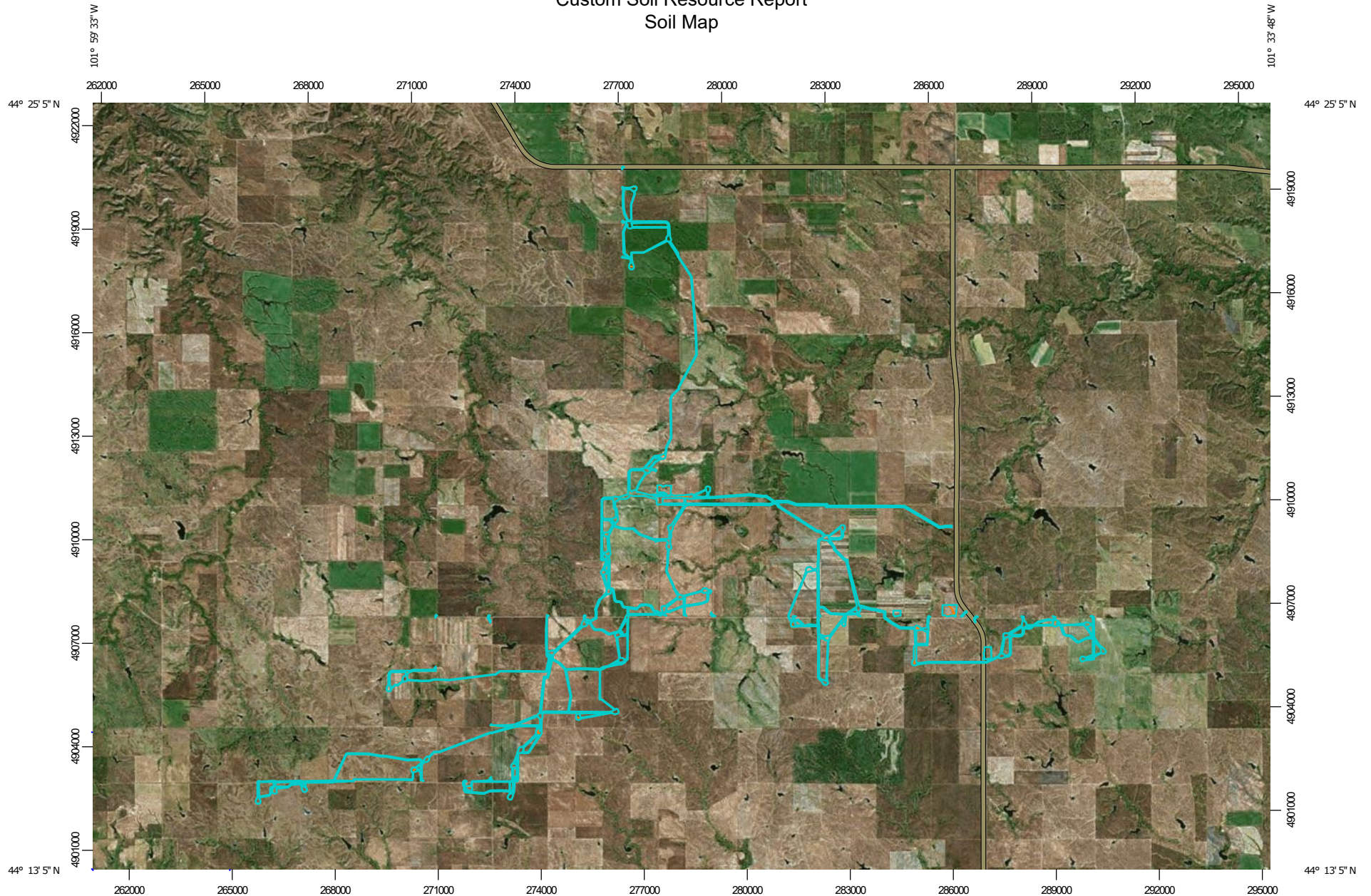
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

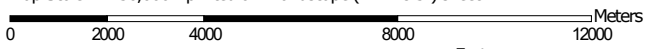
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce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

# Custom Soil Resource Report Soil Map




Map Scale: 1:156,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84


### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


**Water Features**

 Streams and Canals

**Transportation**

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

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Haakon County, South Dakota  
 Survey Area Data: Version 28, Sep 10, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

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

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BkB	Blackpipe silty clay loam, 2 to 6 percent slopes	0.3	0.0%
Bu	Bullcreek clay, 0 to 6 percent slopes	0.4	0.0%
CbA	Capa silt loam, 0 to 6 percent slopes	8.1	0.6%
Ct	Capa-Wendte, channeled, complex	5.9	0.4%
Eg	Egas silty clay loam	1.9	0.1%
Hv	Hoven silt loam	0.0	0.0%
KeA	Kirley clay loam, 0 to 3 percent slopes	0.6	0.0%
KeC	Kirley clay loam, 6 to 9 percent slopes	0.1	0.0%
KhB	Kirley-Mosher complex, 0 to 6 percent slopes	6.9	0.5%
KmB	Kirley-Ottumwa complex, 3 to 6 percent slopes	18.3	1.3%
KmC	Kirley-Ottumwa complex, 6 to 9 percent slopes	0.4	0.0%
Ko	Kolls clay	4.5	0.3%
LaC	Lakoma silty clay, 6 to 9 percent slopes	8.8	0.6%
LaD	Lakoma silty clay, 6 to 15 percent slopes	7.2	0.5%
Lp	Lohmiller silty clay, channeled	4.5	0.3%
Lv	Lohmiller-Arvada complex	4.6	0.3%
Mo	Mosher silt loam, 0 to 3 percent slopes	0.5	0.0%
MyE	Midway silty clay loam, 9 to 35 percent slopes	0.2	0.0%
OtA	Ottumwa silty clay, 0 to 3 percent slopes	65.3	4.6%
OtB	Ottumwa silty clay, 3 to 6 percent slopes	878.5	61.9%
OvA	Ottumwa-Capa complex, 0 to 3 percent slopes	72.9	5.1%
OwB	Ottumwa-Lakoma complex, 3 to 6 percent slopes	108.2	7.6%
OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes	78.3	5.5%
OxC	Ottumwa-Razor silty clays, 6 to 9 percent slopes	35.2	2.5%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
OyC	Ottumwa-Razor-Savo complex, 6 to 15 percent slopes	7.0	0.5%
RbD	Razor-Midway complex, 6 to 15 percent slopes	13.2	0.9%
SrA	Savo silt loam, 0 to 2 percent slopes	12.5	0.9%
SrB	Savo silt loam, 2 to 6 percent slopes	64.6	4.6%
W	Water	0.3	0.0%
Wd	Wendte-Herdcamp silty clays, channeled	10.2	0.7%
<b>Totals for Area of Interest</b>		<b>1,419.6</b>	<b>100.0%</b>

## Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

## Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

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

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

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

## Haakon County, South Dakota

### BkB—Blackpipe silty clay loam, 2 to 6 percent slopes

#### Map Unit Setting

*National map unit symbol:* cwfs  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Blackpipe and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Blackpipe

##### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit, backslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear, convex  
*Parent material:* Clayey residuum weathered from shale and/or mudstone

##### Typical profile

*H1 - 0 to 4 inches:* silty clay loam  
*H2 - 4 to 17 inches:* silty clay loam  
*H3 - 17 to 28 inches:* silty clay loam  
*Cr - 28 to 60 inches:* weathered bedrock

##### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 4.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY010SD - Loamy  
*Forage suitability group:* Loam (G063AY100SD)  
*Other vegetative classification:* Loam (G063AY100SD)  
*Hydric soil rating:* No

## Minor Components

### Wanblee

*Percent of map unit:* 7 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Wortman

*Percent of map unit:* 7 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY013SD - Claypan  
*Other vegetative classification:* Claypan (G063AY800SD)  
*Hydric soil rating:* No

### Hoven

*Percent of map unit:* 1 percent  
*Landscape:* Uplands  
*Landform:* Closed depressions  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

## Bu—Bullcreek clay, 0 to 6 percent slopes

### Map Unit Setting

*National map unit symbol:* 2wfd  
*Landscape:* Valleys  
*Elevation:* 1,360 to 2,530 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Bullcreek and similar soils:* 85 percent  
*Minor components:* 15 percent

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*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Bullcreek

#### Setting

*Landscape:* Valleys  
*Landform:* Stream terraces  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Alluvium derived from shale

#### Typical profile

*A - 0 to 3 inches:* clay  
*Bss - 3 to 26 inches:* clay  
*Byz - 26 to 79 inches:* clay

#### Properties and qualities

*Slope:* 0 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 3 percent  
*Gypsum, maximum content:* 10 percent  
*Maximum salinity:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 13.0  
*Available water supply, 0 to 60 inches:* Low (about 5.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY018SD - Dense Clay  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Minor Components

#### Promise

*Percent of map unit:* 5 percent  
*Landscape:* Valleys  
*Landform:* Stream terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

## Custom Soil Resource Report

### **Wendte**

*Percent of map unit:* 3 percent  
*Landscape:* Valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY021SD - Clayey Overflow  
*Other vegetative classification:* Overflow (G063AY500SD)  
*Hydric soil rating:* No

### **Slickspots**

*Percent of map unit:* 3 percent  
*Landscape:* Valleys  
*Landform:* Swales on stream terraces  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### **Opal**

*Percent of map unit:* 2 percent  
*Landscape:* Valleys  
*Landform:* Stream terraces  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### **Capa**

*Percent of map unit:* 2 percent  
*Landscape:* Valleys  
*Landform:* Swales on stream terraces  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

## **CbA—Capa silt loam, 0 to 6 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2wfgq  
*Landscape:* Uplands  
*Elevation:* 1,340 to 2,800 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Capa and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Capa**

#### **Setting**

*Landscape:* Uplands  
*Landform:* Swales on plains  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Alluvium

#### **Typical profile**

*E - 0 to 2 inches:* silt loam  
*Btn - 2 to 11 inches:* clay  
*Btknyz - 11 to 15 inches:* clay  
*Bkyz - 15 to 27 inches:* clay  
*Cyz - 27 to 79 inches:* clay

#### **Properties and qualities**

*Slope:* 0 to 6 percent  
*Depth to restrictive feature:* 1 to 5 inches to natric  
*Drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* About 42 to 60 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 15 percent  
*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 25.0  
*Available water supply, 0 to 60 inches:* Very low (about 0.4 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY015SD - Thin Claypan  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Minor Components

#### Promise

*Percent of map unit:* 3 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

#### Slickspots

*Percent of map unit:* 3 percent  
*Landscape:* Uplands  
*Landform:* Swales on plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Hurley

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Carter

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Ecological site:* R063AY013SD - Claypan  
*Other vegetative classification:* Claypan (G063AY800SD)

*Hydric soil rating:* No

## **Ct—Capa-Wendte, channeled, complex**

### **Map Unit Setting**

*National map unit symbol:* cwg3  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Capa and similar soils:* 50 percent  
*Wendte and similar soils:* 35 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Capa**

#### **Setting**

*Landscape:* Uplands  
*Landform:* Terraces  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Clayey alluvium derived from clayey shale

#### **Typical profile**

*H1 - 0 to 2 inches:* silt loam  
*H2 - 2 to 20 inches:* clay  
*H3 - 20 to 60 inches:* silty clay

#### **Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* About 42 to 60 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 5 percent  
*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 25.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

## Custom Soil Resource Report

*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY015SD - Thin Claypan  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Description of Wendte

#### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### Typical profile

*H1 - 0 to 6 inches:* silty clay  
*H2 - 6 to 60 inches:* stratified clay to silty clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 42 to 60 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 2 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 1.0  
*Available water supply, 0 to 60 inches:* Moderate (about 8.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY021SD - Clayey Overflow  
*Forage suitability group:* Overflow (G063AY500SD)  
*Other vegetative classification:* Overflow (G063AY500SD)  
*Hydric soil rating:* No

### Minor Components

#### Slickspots, dry

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY999SD - Non-site  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

## Custom Soil Resource Report

### **Herdcamp**

*Percent of map unit:* 5 percent  
*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY002SD - Wet Land  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

### **Ottumwa**

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

## **Eg—Egas silty clay loam**

### **Map Unit Setting**

*National map unit symbol:* cwg5  
*Landscape:* Valleys  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Egas and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Egas**

#### **Setting**

*Landscape:* Valleys  
*Landform:* Drainageways  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

## Custom Soil Resource Report

### Typical profile

*H1 - 0 to 6 inches:* silty clay loam  
*H2 - 6 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 0 to 18 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 5 percent  
*Maximum salinity:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 4.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* C/D  
*Ecological site:* R063AY007SD - Saline Lowland  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

### Minor Components

#### Arvada

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Herdcamp

*Percent of map unit:* 5 percent  
*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY002SD - Wet Land  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

#### Ottumwa

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Plains

## Custom Soil Resource Report

*Landform position (two-dimensional):* Summit  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Hv—Hoven silt loam

#### Map Unit Setting

*National map unit symbol:* cwgc  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Hoven and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Hoven

##### Setting

*Landscape:* Uplands  
*Landform:* Closed depressions  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Clayey alluvium

##### Typical profile

*H1 - 0 to 3 inches:* silt loam  
*H2 - 3 to 7 inches:* silty clay  
*H3 - 7 to 23 inches:* silty clay  
*H4 - 23 to 60 inches:* silty clay

##### Properties and qualities

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* About 0 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 10 percent

## Custom Soil Resource Report

*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 20.0  
*Available water supply, 0 to 60 inches:* Moderate (about 8.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY019SD - Closed Depression  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

### Minor Components

#### Capa

*Percent of map unit:* 10 percent  
*Landscape:* Uplands  
*Landform:* Terraces  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

## KeA—Kirley clay loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* 2wfqj  
*Landscape:* River valleys  
*Elevation:* 1,820 to 2,660 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

*Kirley and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Kirley

#### Setting

*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear

*Parent material:* Alluvium

### Typical profile

*Ap - 0 to 7 inches:* clay loam

*Bt - 7 to 21 inches:* clay

*Bk - 21 to 32 inches:* clay loam

*C - 32 to 79 inches:* clay loam

### Properties and qualities

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 20 percent

*Gypsum, maximum content:* 2 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 1.0

*Available water supply, 0 to 60 inches:* High (about 9.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2c

*Land capability classification (nonirrigated):* 2c

*Hydrologic Soil Group:* C

*Ecological site:* R063AY011SD - Clayey

*Forage suitability group:* Clayey Subsoil (G063AY210SD)

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

### Minor Components

#### Kolls

*Percent of map unit:* 5 percent

*Landscape:* River valleys

*Landform:* Closed depressions on paleoterraces

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* R063AY019SD - Closed Depression

*Other vegetative classification:* Wet (G063AY900SD)

*Hydric soil rating:* Yes

#### Mosher

*Percent of map unit:* 5 percent

*Landscape:* River valleys

*Landform:* Swales on paleoterraces

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Ecological site:* R063AY013SD - Claypan

## Custom Soil Resource Report

*Other vegetative classification:* Claypan (G063AY800SD)  
*Hydric soil rating:* No

### KeC—Kirley clay loam, 6 to 9 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2wfqk  
*Landscape:* River valleys  
*Elevation:* 1,820 to 2,660 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Kirley and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Kirley

##### Setting

*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Typical profile

*A - 0 to 7 inches:* clay loam  
*Bt - 7 to 21 inches:* clay  
*Bk - 21 to 32 inches:* clay loam  
*C - 32 to 79 inches:* clay loam

##### Properties and qualities

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 20 percent  
*Gypsum, maximum content:* 2 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 1.0

## Custom Soil Resource Report

*Available water supply, 0 to 60 inches:* High (about 9.2 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* R063AY011SD - Clayey

*Forage suitability group:* Clayey Subsoil (G063AY210SD)

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

### **Minor Components**

#### **Lakoma**

*Percent of map unit:* 5 percent

*Landscape:* River valleys

*Landform:* Paleoterraces

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Ecological site:* R063AY012SD - Thin Upland

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

#### **Mosher**

*Percent of map unit:* 4 percent

*Landscape:* River valleys

*Landform:* Swales on paleoterraces

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Ecological site:* R063AY013SD - Claypan

*Other vegetative classification:* Claypan (G063AY800SD)

*Hydric soil rating:* No

#### **Ottumwa**

*Percent of map unit:* 3 percent

*Landscape:* River valleys

*Landform:* Paleoterraces

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Ecological site:* R063AY011SD - Clayey

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

#### **Vivian**

*Percent of map unit:* 3 percent

*Landscape:* River valleys

*Landform:* Paleoterraces

*Landform position (two-dimensional):* Summit, shoulder

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Convex

*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* R063AY012SD - Thin Upland

*Other vegetative classification:* Very Droughty Loam (G063AY130SD)

*Hydric soil rating:* No

### **KhB—Kirley-Mosher complex, 0 to 6 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 31qw5

*Landscape:* River valleys

*Elevation:* 1,840 to 2,720 feet

*Mean annual precipitation:* 16 to 21 inches

*Mean annual air temperature:* 43 to 50 degrees F

*Frost-free period:* 100 to 150 days

*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Kirley and similar soils:* 60 percent

*Mosher and similar soils:* 30 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Kirley**

##### **Setting**

*Landscape:* River valleys

*Landform:* Paleoterraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

##### **Typical profile**

*Ap - 0 to 7 inches:* clay loam

*Bt - 7 to 19 inches:* clay

*Bk - 19 to 32 inches:* clay loam

*C - 32 to 79 inches:* clay loam

##### **Properties and qualities**

*Slope:* 0 to 6 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 20 percent

*Gypsum, maximum content:* 2 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

## Custom Soil Resource Report

*Sodium adsorption ratio, maximum:* 2.0

*Available water supply, 0 to 60 inches:* Moderate (about 7.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C

*Ecological site:* R063AY011SD - Clayey

*Forage suitability group:* Clayey Subsoil (G063AY210SD)

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

### Description of Mosher

#### Setting

*Landscape:* River valleys

*Landform:* Paleoterraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Parent material:* Loamy alluvium

#### Typical profile

*Ap - 0 to 3 inches:* silt loam

*E - 3 to 6 inches:* silt loam

*Btn - 6 to 21 inches:* clay

*Bkyz - 21 to 79 inches:* clay

#### Properties and qualities

*Slope:* 0 to 6 percent

*Depth to restrictive feature:* 5 to 7 inches to natric

*Drainage class:* Moderately well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* About 42 to 60 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Gypsum, maximum content:* 4 percent

*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 18.0

*Available water supply, 0 to 60 inches:* Very low (about 0.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* D

*Ecological site:* R063AY013SD - Claypan

*Forage suitability group:* Claypan (G063AY800SD)

*Other vegetative classification:* Claypan (G063AY800SD)

*Hydric soil rating:* No

### Minor Components

#### Capa

*Percent of map unit:* 4 percent

## Custom Soil Resource Report

*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### **Hoven**

*Percent of map unit:* 3 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

### **Kolls**

*Percent of map unit:* 3 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Wet (G063AY900SD)  
*Hydric soil rating:* Yes

## **KmB—Kirley-Ottumwa complex, 3 to 6 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 31crk  
*Landscape:* River valleys  
*Elevation:* 2,050 to 2,670 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Kirley and similar soils:* 45 percent  
*Ottumwa and similar soils:* 35 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Kirley

### Setting

*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Ap - 0 to 7 inches:* clay loam  
*Bt - 7 to 19 inches:* clay  
*Bk - 19 to 32 inches:* clay loam  
*C - 32 to 79 inches:* clay loam

### Properties and qualities

*Slope:* 3 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 20 percent  
*Gypsum, maximum content:* 2 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 2.0  
*Available water supply, 0 to 60 inches:* Moderate (about 7.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

## Description of Ottumwa

### Setting

*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Ap - 0 to 7 inches:* silty clay  
*Bw - 7 to 18 inches:* clay  
*Bk - 18 to 51 inches:* clay  
*Cr - 51 to 61 inches:* bedrock

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 3 to 6 percent  
*Depth to restrictive feature:* 45 to 62 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Low (about 4.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Minor Components

#### Mosher

*Percent of map unit:* 7 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY013SD - Claypan  
*Other vegetative classification:* Claypan (G063AY800SD)  
*Hydric soil rating:* No

#### Lakoma

*Percent of map unit:* 7 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY012SD - Thin Upland  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

#### Opal

*Percent of map unit:* 6 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex

## Custom Soil Resource Report

*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### **KmC—Kirley-Ottumwa complex, 6 to 9 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 31crl  
*Landscape:* River valleys  
*Elevation:* 2,000 to 2,640 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Kirley and similar soils:* 45 percent  
*Ottumwa and similar soils:* 35 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Kirley**

##### **Setting**

*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### **Typical profile**

*Ap - 0 to 7 inches:* clay loam  
*Bt - 7 to 19 inches:* clay  
*Bk - 19 to 32 inches:* clay loam  
*C - 32 to 79 inches:* clay loam

##### **Properties and qualities**

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 20 percent  
*Gypsum, maximum content:* 2 percent

## Custom Soil Resource Report

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 2.0  
*Available water supply, 0 to 60 inches:* Moderate (about 7.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Description of Ottumwa

#### Setting

*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*Ap - 0 to 7 inches:* silty clay  
*Bw - 7 to 18 inches:* clay  
*Bk - 18 to 51 inches:* clay  
*Cr - 51 to 61 inches:* bedrock

#### Properties and qualities

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* 45 to 62 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Low (about 4.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

## Minor Components

### Mosher

*Percent of map unit:* 7 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY013SD - Claypan  
*Other vegetative classification:* Claypan (G063AY800SD)  
*Hydric soil rating:* No

### Lakoma

*Percent of map unit:* 7 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY012SD - Thin Upland  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Opal

*Percent of map unit:* 6 percent  
*Landscape:* River valleys  
*Landform:* Paleoterraces  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

## Ko—Kolls clay

### Map Unit Setting

*National map unit symbol:* 2xbnn  
*Landscape:* Uplands  
*Elevation:* 1,440 to 2,790 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Kolls and similar soils:* 90 percent

## Custom Soil Resource Report

*Minor components: 10 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Kolls

#### Setting

*Landscape: Uplands*

*Landform: Closed depressions on plains*

*Landform position (two-dimensional): Toeslope*

*Landform position (three-dimensional): Interfluve*

*Down-slope shape: Concave*

*Across-slope shape: Concave*

*Parent material: Alluvium*

#### Typical profile

*A - 0 to 3 inches: clay*

*Bssg - 3 to 23 inches: clay*

*BCssygz - 23 to 31 inches: clay*

*Cssygz - 31 to 42 inches: clay*

*Cygz - 42 to 79 inches: clay*

#### Properties and qualities

*Slope: 0 to 1 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Poorly drained*

*Runoff class: Negligible*

*Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)*

*Depth to water table: About 0 inches*

*Frequency of flooding: None*

*Frequency of ponding: Frequent*

*Calcium carbonate, maximum content: 10 percent*

*Gypsum, maximum content: 5 percent*

*Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)*

*Sodium adsorption ratio, maximum: 18.0*

*Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)*

#### Interpretive groups

*Land capability classification (irrigated): 5w*

*Land capability classification (nonirrigated): 5w*

*Hydrologic Soil Group: D*

*Ecological site: R063AY019SD - Closed Depression*

*Forage suitability group: Wet (G063AY900SD)*

*Other vegetative classification: Wet (G063AY900SD)*

*Hydric soil rating: Yes*

### Minor Components

#### Promise

*Percent of map unit: 3 percent*

*Landscape: Uplands*

*Landform: Rim closed depressions on plains*

*Landform position (two-dimensional): Backslope*

*Landform position (three-dimensional): Interfluve*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: R063AY011SD - Clayey*

## Custom Soil Resource Report

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Capa

*Percent of map unit:* 3 percent  
*Landscape:* Uplands  
*Landform:* Outer edges closed depressions on plains  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Carter

*Percent of map unit:* 3 percent  
*Landscape:* Uplands  
*Landform:* Outer edges closed depressions on plains  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Ecological site:* R063AY013SD - Claypan  
*Other vegetative classification:* Claypan (G063AY800SD)  
*Hydric soil rating:* No

### Hoven

*Percent of map unit:* 1 percent  
*Landscape:* Uplands  
*Landform:* Closed depressions on plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Not suited (G063BY000SD)  
*Hydric soil rating:* Yes

## LaC—Lakoma silty clay, 6 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* 2tj7r  
*Landscape:* Uplands  
*Elevation:* 1,480 to 2,710 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Lakoma and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Lakoma

#### Setting

*Landscape:* Uplands

*Landform:* Plains

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Residuum weathered from shale

#### Typical profile

*Ap - 0 to 5 inches:* silty clay

*Bw - 5 to 11 inches:* silty clay

*Bk - 11 to 22 inches:* silty clay

*BCK - 22 to 30 inches:* silty clay

*Cr - 30 to 50 inches:* bedrock

#### Properties and qualities

*Slope:* 6 to 9 percent

*Depth to restrictive feature:* 25 to 33 inches to paralithic bedrock

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 30 percent

*Gypsum, maximum content:* 5 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 3.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6e

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* R063AY012SD - Thin Upland

*Forage suitability group:* Clayey Subsoil (G063BY210SD)

*Other vegetative classification:* Clayey Subsoil (G063BY210SD)

*Hydric soil rating:* No

### Minor Components

#### Ottumwa

*Percent of map unit:* 5 percent

*Landscape:* Uplands

*Landform:* Plains

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* R063AY011SD - Clayey  
*Hydric soil rating:* No

### Capa

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Swales  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Okaton

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Ecological site:* R063AY017SD - Shallow Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Herdcamp

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Drainageways  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave, linear  
*Ecological site:* R063AY002SD - Wet Land  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

## LaD—Lakoma silty clay, 6 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* 2tj7p  
*Landscape:* Uplands  
*Elevation:* 1,640 to 2,790 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Lakoma and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Lakoma

#### Setting

*Landscape:* Uplands

*Landform:* Hills

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Clayey residuum weathered from calcareous shale

#### Typical profile

*Ap - 0 to 5 inches:* silty clay

*Bw - 5 to 11 inches:* silty clay

*Bk - 11 to 22 inches:* silty clay

*BCK - 22 to 30 inches:* silty clay

*Cr - 30 to 50 inches:* bedrock

#### Properties and qualities

*Slope:* 6 to 15 percent

*Depth to restrictive feature:* 25 to 33 inches to paralithic bedrock

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 30 percent

*Gypsum, maximum content:* 5 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 3.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6e

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* R063AY012SD - Thin Upland

*Forage suitability group:* Clayey Subsoil (G063BY210SD)

*Other vegetative classification:* Clayey Subsoil (G063BY210SD)

*Hydric soil rating:* No

### Minor Components

#### Bullcreek

*Percent of map unit:* 5 percent

*Landscape:* Uplands

*Landform:* Drainageways

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Concave  
*Ecological site:* R063AY018SD - Dense Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### **Okaton**

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Hills  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Ecological site:* R063AY017SD - Shallow Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### **Vivian**

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Hills  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY012SD - Thin Upland  
*Hydric soil rating:* No

### **Herdcamp**

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Drainageways  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave, linear  
*Ecological site:* R063AY002SD - Wet Land  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

## **Lp—Lohmiller silty clay, channeled**

### **Map Unit Setting**

*National map unit symbol:* cwgz  
*Landscape:* River valleys  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Lohmiller, channeled, and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Lohmiller, Channeled**

**Setting**

*Landscape:* River valleys

*Landform:* Flood plains

*Landform position (two-dimensional):* Toeslope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey alluvium derived from shale

**Typical profile**

*H1 - 0 to 4 inches:* silty clay

*H2 - 4 to 60 inches:* silty clay

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 5 percent

*Gypsum, maximum content:* 1 percent

*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 2.0

*Available water supply, 0 to 60 inches:* Moderate (about 8.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 6w

*Land capability classification (nonirrigated):* 6w

*Hydrologic Soil Group:* C

*Ecological site:* R063AY020SD - Loamy Overflow

*Forage suitability group:* Overflow (G063AY500SD)

*Other vegetative classification:* Overflow (G063AY500SD)

*Hydric soil rating:* No

**Minor Components**

**Arvada**

*Percent of map unit:* 3 percent

*Landscape:* Uplands

*Landform:* Alluvial fans

*Landform position (two-dimensional):* Toeslope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* R063AY015SD - Thin Claypan

*Other vegetative classification:* Not suited (G063AY000SD)

*Hydric soil rating:* No

## Custom Soil Resource Report

### **Haverson**

*Percent of map unit:* 2 percent  
*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY020SD - Loamy Overflow  
*Other vegetative classification:* Overflow (G063AY500SD)  
*Hydric soil rating:* No

### **Kyle**

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Foothills  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### **Pierre**

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Dissected plains  
*Landform position (two-dimensional):* Backslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### **Herdcamp**

*Percent of map unit:* 1 percent  
*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY002SD - Wet Land  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

## **Lv—Lohmiller-Arvada complex**

### **Map Unit Setting**

*National map unit symbol:* cwh0  
*Landscape:* River valleys  
*Elevation:* 1,300 to 1,640 feet

## Custom Soil Resource Report

*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Lohmiller and similar soils:* 55 percent  
*Arvada and similar soils:* 35 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Lohmiller

#### Setting

*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium derived from shale

#### Typical profile

*H1 - 0 to 4 inches:* silty clay  
*H2 - 4 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 2.0  
*Available water supply, 0 to 60 inches:* Moderate (about 8.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2c  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY022SD - Loamy Terrace  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Description of Arvada

#### Setting

*Landscape:* Uplands  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave

## Custom Soil Resource Report

*Parent material:* Clayey residuum weathered from shale

### Typical profile

*H1 - 0 to 3 inches:* silt loam  
*H2 - 3 to 14 inches:* clay  
*H3 - 14 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 10 percent  
*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 25.0  
*Available water supply, 0 to 60 inches:* Low (about 6.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY015SD - Thin Claypan  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Minor Components

#### Kyle

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

#### Slickspots, dry

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY999SD - Non-site  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Herdcamp

*Percent of map unit:* 1 percent

## Custom Soil Resource Report

*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY002SD - Wet Land  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

### **Mo—Mosher silt loam, 0 to 3 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 2zk44  
*Landscape:* River valleys  
*Elevation:* 1,710 to 2,760 feet  
*Mean annual precipitation:* 19 to 28 inches  
*Mean annual air temperature:* 46 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Mosher and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Mosher**

##### **Setting**

*Landscape:* River valleys  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### **Typical profile**

*Ap - 0 to 4 inches:* silt loam  
*E - 4 to 7 inches:* silt loam  
*Btn - 7 to 16 inches:* clay  
*Btnz - 16 to 33 inches:* clay  
*Bkz - 33 to 47 inches:* clay  
*C - 47 to 79 inches:* loam

##### **Properties and qualities**

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* 6 to 7 inches to natric  
*Drainage class:* Moderately well drained  
*Runoff class:* Medium

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* About 42 to 60 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Gypsum, maximum content:* 4 percent

*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 20.0

*Available water supply, 0 to 60 inches:* Very low (about 1.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* D

*Ecological site:* R063BY013SD - Claypan

*Forage suitability group:* Claypan (G063BY800SD)

*Other vegetative classification:* Claypan (G063BY800SD)

*Hydric soil rating:* No

### Minor Components

#### Onita

*Percent of map unit:* 4 percent

*Landscape:* River valleys

*Landform:* Terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Ecological site:* R063BY020SD - Loamy Overflow

*Other vegetative classification:* Overflow (G063BY500SD)

*Hydric soil rating:* No

#### Capa

*Percent of map unit:* 4 percent

*Landscape:* River valleys

*Landform:* Terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Ecological site:* R063BY015SD - Thin Claypan

*Other vegetative classification:* Not suited (G063BY000SD)

*Hydric soil rating:* No

#### Kolls

*Percent of map unit:* 4 percent

*Landscape:* River valleys

*Landform:* Terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* R063BY019SD - Closed Depression

*Other vegetative classification:* Wet (G063BY900SD)

*Hydric soil rating:* Yes

#### Reliance

*Percent of map unit:* 4 percent

## Custom Soil Resource Report

*Landscape:* River valleys  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063BY010SD - Loamy  
*Other vegetative classification:* Loam (G063BY100SD)  
*Hydric soil rating:* No

### **Kirley**

*Percent of map unit:* 4 percent  
*Landscape:* River valleys  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063BY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063BY210SD)  
*Hydric soil rating:* No

## **MyE—Midway silty clay loam, 9 to 35 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2ynvc  
*Landscape:* Uplands  
*Elevation:* 2,300 to 3,210 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Midway and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Midway**

#### **Setting**

*Landscape:* Uplands  
*Landform:* Dissected hills  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Nose slope, crest  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex  
*Parent material:* Clayey residuum weathered from calcareous shale

#### **Typical profile**

*A - 0 to 4 inches:* silty clay loam  
*C - 4 to 15 inches:* parachannery silty clay

## Custom Soil Resource Report

Cr - 15 to 79 inches: bedrock

### Properties and qualities

*Slope:* 9 to 35 percent

*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock

*Drainage class:* Well drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Gypsum, maximum content:* 7 percent

*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 4.0

*Available water supply, 0 to 60 inches:* Very low (about 2.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 7e

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* D

*Ecological site:* R063AY017SD - Shallow Clay

*Forage suitability group:* Not suited (G063AY000SD)

*Other vegetative classification:* Not suited (G063AY000SD)

*Hydric soil rating:* No

### Minor Components

#### Razor

*Percent of map unit:* 5 percent

*Landscape:* Uplands

*Landform:* Dissected hills

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R063AY011SD - Clayey

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

#### Nihill

*Percent of map unit:* 4 percent

*Landscape:* Uplands

*Landform:* Dissected hills

*Landform position (two-dimensional):* Summit, backslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R063AY016SD - Very Shallow

*Other vegetative classification:* Not suited (G063AY000SD)

*Hydric soil rating:* No

#### Savo

*Percent of map unit:* 3 percent

*Landscape:* Uplands

*Landform:* Dissected hills

## Custom Soil Resource Report

*Landform position (two-dimensional):* Foothlope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Ecological site:* R063AY010SD - Loamy  
*Other vegetative classification:* Loam (G063AY100SD)  
*Hydric soil rating:* No

### **Hisle**

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Swales  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### **Rock outcrop, shale**

*Percent of map unit:* 1 percent  
*Landscape:* Uplands  
*Landform:* Dissected hills  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Nose slope, crest  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex  
*Ecological site:* R063AY999SD - Non-site  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

## **OtA—Ottumwa silty clay, 0 to 3 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cwhl  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Ottumwa and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Ottumwa

### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Clayey alluvium and/or clayey residuum weathered from shale

### Typical profile

*H1 - 0 to 6 inches:* silty clay  
*H2 - 6 to 26 inches:* clay  
*H3 - 26 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

## Minor Components

### Kolls

*Percent of map unit:* 8 percent  
*Landscape:* Uplands  
*Landform:* Depressions  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Wet (G063AY900SD)  
*Hydric soil rating:* Yes

### Capa

*Percent of map unit:* 7 percent  
*Landscape:* Uplands  
*Landform:* Terraces

## Custom Soil Resource Report

*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### OtB—Ottumwa silty clay, 3 to 6 percent slopes

#### Map Unit Setting

*National map unit symbol:* cw hm  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Ottumwa and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Ottumwa

##### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Clayey alluvium and/or clayey residuum weathered from shale

##### Typical profile

*H1 - 0 to 6 inches:* silty clay  
*H2 - 6 to 26 inches:* clay  
*H3 - 26 to 60 inches:* silty clay

##### Properties and qualities

*Slope:* 3 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

## Custom Soil Resource Report

*Sodium adsorption ratio, maximum:* 7.0

*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* R063AY011SD - Clayey

*Forage suitability group:* Clayey Subsoil (G063AY210SD)

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

### Minor Components

#### Capa

*Percent of map unit:* 5 percent

*Landscape:* Uplands

*Landform:* Terraces

*Landform position (two-dimensional):* Toeslope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* R063AY015SD - Thin Claypan

*Other vegetative classification:* Not suited (G063AY000SD)

*Hydric soil rating:* No

#### Kolls

*Percent of map unit:* 5 percent

*Landscape:* Uplands

*Landform:* Depressions

*Landform position (two-dimensional):* Toeslope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* R063AY019SD - Closed Depression

*Other vegetative classification:* Wet (G063AY900SD)

*Hydric soil rating:* Yes

#### Lakoma

*Percent of map unit:* 5 percent

*Landscape:* Uplands

*Landform:* Dissected plains

*Landform position (two-dimensional):* Summit, backslope

*Down-slope shape:* Linear

*Across-slope shape:* Convex, linear

*Ecological site:* R063AY012SD - Thin Upland

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

## OvA—Ottumwa-Capa complex, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* cwhn

## Custom Soil Resource Report

*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Ottumwa and similar soils:* 55 percent  
*Capa and similar soils:* 35 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ottumwa

#### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Clayey alluvium and/or clayey residuum weathered from shale

#### Typical profile

*H1 - 0 to 6 inches:* silty clay  
*H2 - 6 to 26 inches:* clay  
*H3 - 26 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Description of Capa

#### Setting

*Landscape:* Uplands  
*Landform:* Terraces

## Custom Soil Resource Report

*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Clayey alluvium derived from clayey shale

### Typical profile

*H1 - 0 to 2 inches:* silt loam  
*H2 - 2 to 20 inches:* clay  
*H3 - 20 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* About 42 to 60 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 5 percent  
*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 25.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY015SD - Thin Claypan  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

### Minor Components

#### Wendte

*Percent of map unit:* 4 percent  
*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY021SD - Clayey Overflow  
*Other vegetative classification:* Overflow (G063AY500SD)  
*Hydric soil rating:* No

#### Kolls

*Percent of map unit:* 3 percent  
*Landscape:* Uplands  
*Landform:* Depressions  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Wet (G063AY900SD)  
*Hydric soil rating:* Yes

**Lakoma**

*Percent of map unit:* 3 percent  
*Landscape:* Uplands  
*Landform:* Dissected plains  
*Landform position (two-dimensional):* Summit, backslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex, linear  
*Ecological site:* R063AY012SD - Thin Upland  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

**OwB—Ottumwa-Lakoma complex, 3 to 6 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2v676  
*Landscape:* Uplands  
*Elevation:* 1,900 to 2,790 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 150 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Ottumwa and similar soils:* 60 percent  
*Lakoma and similar soils:* 30 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Ottumwa**

**Setting**

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Interfluvium  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*Ap - 0 to 7 inches:* clay  
*Bw - 7 to 25 inches:* clay  
*Bk - 25 to 51 inches:* clay  
*Cr - 51 to 61 inches:* bedrock

**Properties and qualities**

*Slope:* 3 to 6 percent  
*Depth to restrictive feature:* 45 to 62 inches to paralithic bedrock  
*Drainage class:* Well drained

## Custom Soil Resource Report

*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Low (about 5.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Description of Lakoma

#### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Residuum weathered from shale

#### Typical profile

*Ap - 0 to 5 inches:* silty clay  
*Bw - 5 to 13 inches:* silty clay  
*Bk - 13 to 22 inches:* silty clay  
*Bck - 22 to 30 inches:* silty clay  
*Cr - 30 to 40 inches:* bedrock

#### Properties and qualities

*Slope:* 3 to 6 percent  
*Depth to restrictive feature:* 25 to 33 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 30 percent  
*Gypsum, maximum content:* 5 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 3.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e

## Custom Soil Resource Report

*Hydrologic Soil Group:* D  
*Ecological site:* R063AY012SD - Thin Upland  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Minor Components

#### Capa

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Swales  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Bullcreek

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Drainageways  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY018SD - Dense Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Kolls

*Percent of map unit:* 2 percent  
*Landscape:* Uplands  
*Landform:* Closed depressions  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Wet (G063AY900SD)  
*Hydric soil rating:* Yes

## OwC—Ottumwa-Lakoma silty clays, 6 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* 2tj7z  
*Landscape:* Uplands

## Custom Soil Resource Report

*Elevation:* 1,890 to 2,790 feet  
*Mean annual precipitation:* 16 to 21 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Ottumwa and similar soils:* 55 percent  
*Lakoma and similar soils:* 35 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ottumwa

#### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Slope alluvium

#### Typical profile

*Ap - 0 to 7 inches:* clay  
*Bw - 7 to 25 inches:* clay  
*Bk - 25 to 51 inches:* clay  
*Cr - 51 to 61 inches:* bedrock

#### Properties and qualities

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* 45 to 62 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Low (about 5.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

## Description of Lakoma

### Setting

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Residuum weathered from shale

### Typical profile

*Ap - 0 to 5 inches:* silty clay  
*Bw - 5 to 13 inches:* silty clay  
*Bk - 13 to 22 inches:* silty clay  
*BCK - 22 to 30 inches:* silty clay  
*Cr - 30 to 40 inches:* bedrock

### Properties and qualities

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* 25 to 33 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 30 percent  
*Gypsum, maximum content:* 5 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 3.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY012SD - Thin Upland  
*Forage suitability group:* Clayey Subsoil (G063BY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063BY210SD)  
*Hydric soil rating:* No

## Minor Components

### Capa

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Swales  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

**Bullcreek**

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Drainageways  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY018SD - Dense Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

**OxC—Ottumwa-Razor silty clays, 6 to 9 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cwhr  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Ottumwa and similar soils:* 50 percent  
*Razor and similar soils:* 35 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Ottumwa**

**Setting**

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Clayey alluvium and/or clayey residuum weathered from shale

**Typical profile**

*H1 - 0 to 6 inches:* silty clay  
*H2 - 6 to 26 inches:* clay  
*H3 - 26 to 60 inches:* silty clay

**Properties and qualities**

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Description of Razor

#### Setting

*Landscape:* Uplands  
*Landform:* Dissected plains  
*Landform position (two-dimensional):* Summit, backslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Alluvium and/or clayey residuum weathered from calcareous shale

#### Typical profile

*H1 - 0 to 4 inches:* silty clay  
*H2 - 4 to 14 inches:* silty clay  
*H3 - 14 to 29 inches:* silty clay  
*Cr - 29 to 60 inches:* weathered bedrock

#### Properties and qualities

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 5.0  
*Available water supply, 0 to 60 inches:* Low (about 4.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY011SD - Clayey

## Custom Soil Resource Report

*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### Minor Components

#### Arvada

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY015SD - Thin Claypan  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Egas

*Percent of map unit:* 5 percent  
*Landscape:* Valleys  
*Landform:* Drainageways  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY007SD - Saline Lowland  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

#### Midway

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Hills  
*Landform position (two-dimensional):* Shoulder  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* R063AY017SD - Shallow Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

## OyC—Ottumwa-Razor-Savo complex, 6 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* cwhs  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Ottumwa and similar soils:* 35 percent

*Razor and similar soils:* 30 percent

*Savo and similar soils:* 25 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ottumwa

#### Setting

*Landscape:* Uplands

*Landform:* Plains

*Landform position (two-dimensional):* Summit

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Clayey alluvium and/or clayey residuum weathered from shale

#### Typical profile

*H1 - 0 to 6 inches:* silty clay

*H2 - 6 to 26 inches:* clay

*H3 - 26 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 6 to 9 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Gypsum, maximum content:* 1 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 7.0

*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* R063AY011SD - Clayey

*Forage suitability group:* Clayey Subsoil (G063AY210SD)

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

### Description of Razor

#### Setting

*Landscape:* Uplands

*Landform:* Hills

*Landform position (two-dimensional):* Summit, backslope

*Down-slope shape:* Linear

*Across-slope shape:* Convex, linear

*Parent material:* Alluvium and/or clayey residuum weathered from calcareous shale

**Typical profile**

*H1 - 0 to 4 inches:* silty clay  
*H2 - 4 to 14 inches:* silty clay  
*H3 - 14 to 29 inches:* silty clay  
*Cr - 29 to 60 inches:* weathered bedrock

**Properties and qualities**

*Slope:* 6 to 15 percent  
*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 5.0  
*Available water supply, 0 to 60 inches:* Low (about 4.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* D  
*Ecological site:* R063AY011SD - Clayey  
*Forage suitability group:* Clayey Subsoil (G063AY210SD)  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

**Description of Savo**

**Setting**

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit, backslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Silty alluvium

**Typical profile**

*H1 - 0 to 6 inches:* silt loam  
*H2 - 6 to 20 inches:* silty clay loam  
*H3 - 20 to 35 inches:* silty clay loam  
*H4 - 35 to 60 inches:* silty clay loam

**Properties and qualities**

*Slope:* 6 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent

## Custom Soil Resource Report

*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 1.0  
*Available water supply, 0 to 60 inches:* High (about 9.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY010SD - Loamy  
*Forage suitability group:* Loam (G063AY100SD)  
*Other vegetative classification:* Loam (G063AY100SD)  
*Hydric soil rating:* No

### Minor Components

#### Lohmiller

*Percent of map unit:* 5 percent  
*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY022SD - Loamy Terrace  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

#### Midway

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Hills  
*Landform position (two-dimensional):* Shoulder  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* R063AY017SD - Shallow Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

## RbD—Razor-Midway complex, 6 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* cwj2  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Razor and similar soils:* 55 percent

*Midway and similar soils:* 30 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Razor

#### Setting

*Landscape:* Uplands

*Landform:* Hills

*Landform position (two-dimensional):* Summit, backslope

*Down-slope shape:* Linear

*Across-slope shape:* Convex, linear

*Parent material:* Alluvium and/or clayey residuum weathered from calcareous shale

#### Typical profile

*H1 - 0 to 4 inches:* silty clay

*H2 - 4 to 14 inches:* silty clay

*H3 - 14 to 29 inches:* silty clay

*Cr - 29 to 60 inches:* weathered bedrock

#### Properties and qualities

*Slope:* 9 to 15 percent

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Gypsum, maximum content:* 1 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 5.0

*Available water supply, 0 to 60 inches:* Low (about 4.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* R063AY011SD - Clayey

*Forage suitability group:* Clayey Subsoil (G063AY210SD)

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

### Description of Midway

#### Setting

*Landscape:* Uplands

*Landform:* Hills

*Landform position (two-dimensional):* Shoulder

*Down-slope shape:* Linear

*Across-slope shape:* Convex

## Custom Soil Resource Report

*Parent material:* Slope alluvium and/or clayey residuum weathered from calcareous shale

### Typical profile

*H1 - 0 to 4 inches:* silty clay loam

*H2 - 4 to 13 inches:* clay

*Cr - 13 to 60 inches:* weathered bedrock

### Properties and qualities

*Slope:* 6 to 15 percent

*Depth to restrictive feature:* 6 to 20 inches to paralithic bedrock

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Gypsum, maximum content:* 15 percent

*Maximum salinity:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 15.0

*Available water supply, 0 to 60 inches:* Very low (about 2.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* R063AY017SD - Shallow Clay

*Forage suitability group:* Not suited (G063AY000SD)

*Other vegetative classification:* Not suited (G063AY000SD)

*Hydric soil rating:* No

### Minor Components

#### Savo

*Percent of map unit:* 8 percent

*Landscape:* Uplands

*Landform:* Plains

*Landform position (two-dimensional):* Summit, backslope

*Down-slope shape:* Linear

*Across-slope shape:* Convex, linear

*Ecological site:* R063AY010SD - Loamy

*Other vegetative classification:* Loam (G063AY100SD)

*Hydric soil rating:* No

#### Ottumwa

*Percent of map unit:* 7 percent

*Landscape:* Uplands

*Landform:* Plains

*Landform position (two-dimensional):* Summit

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Ecological site:* R063AY011SD - Clayey

*Other vegetative classification:* Clayey Subsoil (G063AY210SD)

*Hydric soil rating:* No

## **SrA—Savo silt loam, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cwjh  
*Landscape:* Uplands  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

*Savo and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Savo**

#### **Setting**

*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Summit, backslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Silty alluvium

#### **Typical profile**

*H1 - 0 to 6 inches:* silt loam  
*H2 - 6 to 20 inches:* silty clay loam  
*H3 - 20 to 35 inches:* silty clay loam  
*H4 - 35 to 60 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 1.0  
*Available water supply, 0 to 60 inches:* High (about 9.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 1

## Custom Soil Resource Report

*Land capability classification (nonirrigated): 2c*  
*Hydrologic Soil Group: C*  
*Ecological site: R063AY010SD - Loamy*  
*Forage suitability group: Loam (G063AY100SD)*  
*Other vegetative classification: Loam (G063AY100SD)*  
*Hydric soil rating: No*

### Minor Components

#### Ottumwa

*Percent of map unit: 5 percent*  
*Landscape: Uplands*  
*Landform: Plains*  
*Landform position (two-dimensional): Summit*  
*Down-slope shape: Linear*  
*Across-slope shape: Convex*  
*Ecological site: R063AY011SD - Clayey*  
*Other vegetative classification: Clayey Subsoil (G063AY210SD)*  
*Hydric soil rating: No*

#### Wortman

*Percent of map unit: 4 percent*  
*Landscape: Uplands*  
*Landform: Plains*  
*Landform position (two-dimensional): Footslope*  
*Down-slope shape: Linear*  
*Across-slope shape: Concave*  
*Ecological site: R063AY013SD - Claypan*  
*Other vegetative classification: Claypan (G063AY800SD)*  
*Hydric soil rating: No*

#### Hoven

*Percent of map unit: 1 percent*  
*Landscape: Uplands*  
*Landform: Closed depressions*  
*Landform position (two-dimensional): Toeslope*  
*Down-slope shape: Concave*  
*Across-slope shape: Concave*  
*Ecological site: R063AY019SD - Closed Depression*  
*Other vegetative classification: Not suited (G063AY000SD)*  
*Hydric soil rating: Yes*

## SrB—Savo silt loam, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol: cwjj*  
*Landscape: Uplands*  
*Elevation: 1,300 to 1,640 feet*  
*Mean annual precipitation: 14 to 19 inches*  
*Mean annual air temperature: 43 to 50 degrees F*

## Custom Soil Resource Report

*Frost-free period:* 130 to 160 days

*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

*Savo and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Savo

#### Setting

*Landscape:* Uplands

*Landform:* Plains

*Landform position (two-dimensional):* Summit, backslope

*Down-slope shape:* Linear

*Across-slope shape:* Convex, linear

*Parent material:* Silty alluvium

#### Typical profile

*H1 - 0 to 6 inches:* silt loam

*H2 - 6 to 20 inches:* silty clay loam

*H3 - 20 to 35 inches:* silty clay loam

*H4 - 35 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 2 to 6 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Gypsum, maximum content:* 1 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 1.0

*Available water supply, 0 to 60 inches:* High (about 9.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C

*Ecological site:* R063AY010SD - Loamy

*Forage suitability group:* Loam (G063AY100SD)

*Other vegetative classification:* Loam (G063AY100SD)

*Hydric soil rating:* No

### Minor Components

#### Ottumwa

*Percent of map unit:* 5 percent

*Landscape:* Uplands

*Landform:* Plains

*Landform position (two-dimensional):* Summit

*Down-slope shape:* Linear

*Across-slope shape:* Convex

## Custom Soil Resource Report

*Ecological site:* R063AY011SD - Clayey  
*Other vegetative classification:* Clayey Subsoil (G063AY210SD)  
*Hydric soil rating:* No

### **Wortman**

*Percent of map unit:* 4 percent  
*Landscape:* Uplands  
*Landform:* Plains  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY013SD - Claypan  
*Other vegetative classification:* Claypan (G063AY800SD)  
*Hydric soil rating:* No

### **Hoven**

*Percent of map unit:* 1 percent  
*Landscape:* Uplands  
*Landform:* Closed depressions  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R063AY019SD - Closed Depression  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

## **W—Water**

### **Map Unit Setting**

*National map unit symbol:* 2wx3y  
*Elevation:* 970 to 3,940 feet  
*Mean annual precipitation:* 13 to 31 inches  
*Mean annual air temperature:* 39 to 50 degrees F  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Water:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Water**

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 8  
*Hydric soil rating:* Unranked

## **Wd—Wendte-Herdcamp silty clays, channeled**

### **Map Unit Setting**

*National map unit symbol:* cwjq  
*Landscape:* River valleys  
*Elevation:* 1,300 to 1,640 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 43 to 50 degrees F  
*Frost-free period:* 130 to 160 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Wendte and similar soils:* 55 percent  
*Herdcamp and similar soils:* 30 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Wendte**

#### **Setting**

*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### **Typical profile**

*H1 - 0 to 6 inches:* silty clay  
*H2 - 6 to 60 inches:* stratified clay to silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 42 to 60 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 2 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 1.0  
*Available water supply, 0 to 60 inches:* Moderate (about 8.5 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* C  
*Ecological site:* R063AY021SD - Clayey Overflow

## Custom Soil Resource Report

*Forage suitability group:* Overflow (G063AY500SD)  
*Other vegetative classification:* Overflow (G063AY500SD)  
*Hydric soil rating:* No

### Description of Herdcamp

#### Setting

*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### Typical profile

*H1 - 0 to 5 inches:* silty clay  
*H2 - 5 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Very poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* Frequent  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 10 percent  
*Maximum salinity:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 8.0  
*Available water supply, 0 to 60 inches:* Moderate (about 8.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* R063AY002SD - Wet Land  
*Forage suitability group:* Not suited (G063AY000SD)  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

### Minor Components

#### Bullcreek

*Percent of map unit:* 5 percent  
*Landscape:* Uplands  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* R063AY018SD - Dense Clay  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* No

#### Egas

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landscape:* Valleys  
*Landform:* Drainageways  
*Landform position (two-dimensional):* Foothlope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY007SD - Saline Lowland  
*Other vegetative classification:* Not suited (G063AY000SD)  
*Hydric soil rating:* Yes

### **Nimbro, channeled**

*Percent of map unit:* 5 percent  
*Landscape:* River valleys  
*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R063AY020SD - Loamy Overflow  
*Other vegetative classification:* Overflow (G063AY500SD)  
*Hydric soil rating:* No

# **Soil Information for All Uses**

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## **Suitabilities and Limitations for Use**

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

## **Land Management**

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices, for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Example interpretations include suitability for a variety of irrigation practices, log landings, haul roads and major skid trails, equipment operability, site preparation, suitability for hand and mechanical planting, potential erosion hazard associated with various practices, and ratings for fencing and waterline installation.

## **Erosion Hazard (Off-Road, Off-Trail)**

The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope, soil erosion factor K, and an index of rainfall erosivity (R). The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

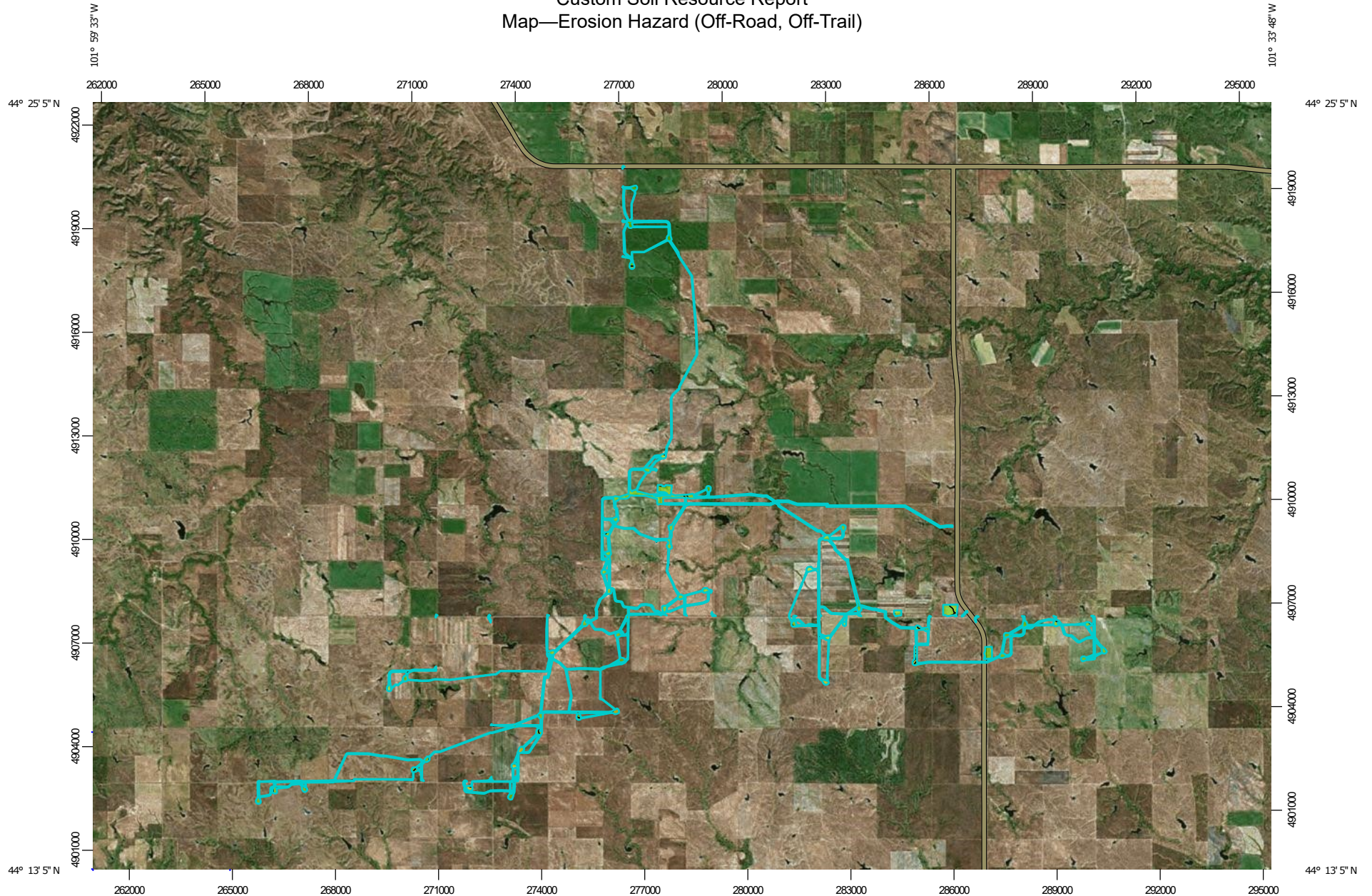
## Custom Soil Resource Report

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

# Custom Soil Resource Report Map—Erosion Hazard (Off-Road, Off-Trail)



Map Scale: 1:156,000 if printed on A landscape (11" x 8.5") sheet.


0 2000 4000 8000 12000 Meters

0 5000 10000 20000 30000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84






## MAP LEGEND

### Area of Interest (AOI)






 Area of Interest (AOI)

### Soils






#### Soil Rating Polygons

 Very severe  
 Severe  
 Moderate  
 Slight  
 Not rated or not available


#### Soil Rating Lines

 Very severe  
 Severe  
 Moderate  
 Slight  
 Not rated or not available

#### Soil Rating Points




 Very severe  
 Severe  
 Moderate  
 Slight  
 Not rated or not available

### Water Features


 Streams and Canals

### Transportation

 Rails  
 Interstate Highways

 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Haakon County, South Dakota  
 Survey Area Data: Version 28, Sep 10, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

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

Custom Soil Resource Report

**Tables—Erosion Hazard (Off-Road, Off-Trail)**

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BkB	Blackpipe silty clay loam, 2 to 6 percent slopes	Slight	Blackpipe (85%)		0.3	0.0%
			Wanblee (7%)			
			Wortman (7%)			
			Hoven (1%)			
Bu	Bullcreek clay, 0 to 6 percent slopes	Slight	Bullcreek (85%)		0.4	0.0%
			Promise (5%)			
			Wendte (3%)			
			Opal (2%)			
			Capa (2%)			
CbA	Capa silt loam, 0 to 6 percent slopes	Slight	Capa (90%)		8.1	0.6%
			Promise (3%)			
			Hurley (2%)			
			Carter (2%)			
Ct	Capa-Wendte, channeled, complex	Slight	Capa (50%)		5.9	0.4%
			Wendte (35%)			
			Slickspots, dry (5%)			
			Herdcamp (5%)			
			Ottumwa (5%)			
Eg	Egas silty clay loam	Slight	Egas (85%)		1.9	0.1%
			Arvada (5%)			
			Herdcamp (5%)			
			Ottumwa (5%)			
Hv	Hoven silt loam	Slight	Hoven (90%)		0.0	0.0%
			Capa (10%)			
KeA	Kirley clay loam, 0 to 3 percent slopes	Slight	Kirley (90%)		0.6	0.0%
			Kolls (5%)			
			Mosher (5%)			
KeC	Kirley clay loam, 6 to 9 percent slopes	Slight	Kirley (85%)		0.1	0.0%
			Mosher (4%)			
			Vivian (3%)			
KhB	Kirley-Mosher complex, 0 to 6 percent slopes	Slight	Kirley (60%)		6.9	0.5%
			Mosher (30%)			
			Capa (4%)			
			Hoven (3%)			
			Kolls (3%)			

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
KmB	Kirley-Ottumwa complex, 3 to 6 percent slopes	Slight	Kirley (45%)		18.3	1.3%
			Ottumwa (35%)			
			Mosher (7%)			
			Lakoma (7%)			
			Opal (6%)			
KmC	Kirley-Ottumwa complex, 6 to 9 percent slopes	Slight	Kirley (45%)		0.4	0.0%
			Mosher (7%)			
Ko	Kolls clay	Slight	Kolls (90%)		4.5	0.3%
			Promise (3%)			
			Capa (3%)			
			Carter (3%)			
			Hoven (1%)			
LaC	Lakoma silty clay, 6 to 9 percent slopes	Moderate	Lakoma (85%)	Surface kw times slope times R index (0.27)	8.8	0.6%
			Ottumwa (5%)	Surface kw times slope times R index (0.17)		
			Okaton (4%)	Surface kw times slope times R index (0.27)		
LaD	Lakoma silty clay, 6 to 15 percent slopes	Moderate	Lakoma (85%)	Surface kw times slope times R index (0.27)	7.2	0.5%
			Okaton (4%)	Surface kw times slope times R index (0.44)		
Lp	Lohmiller silty clay, channeled	Slight	Lohmiller, channeled (90%)		4.5	0.3%
			Arvada (3%)			
			Haverson (2%)			
			Kyle (2%)			
			Herdcamp (1%)			
Lv	Lohmiller-Arvada complex	Slight	Lohmiller (55%)		4.6	0.3%
			Arvada (35%)			
			Kyle (5%)			
			Slickspots, dry (4%)			
			Herdcamp (1%)			
Mo	Mosher silt loam, 0 to 3 percent slopes	Slight	Mosher (80%)		0.5	0.0%
			Onita (4%)			
			Capa (4%)			

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Kolls (4%)			
			Reliance (4%)			
			Kirley (4%)			
MyE	Midway silty clay loam, 9 to 35 percent slopes	Moderate	Midway (85%)	Surface kw times slope times R index (0.63)	0.2	0.0%
			Razor (5%)	Surface kw times slope times R index (0.61)		
			Savo (3%)	Surface kw times slope times R index (0.25)		
OtA	Ottumwa silty clay, 0 to 3 percent slopes	Slight	Ottumwa (85%)		65.3	4.6%
			Kolls (8%)			
			Capa (7%)			
OtB	Ottumwa silty clay, 3 to 6 percent slopes	Slight	Ottumwa (85%)		878.5	61.9%
			Capa (5%)			
			Kolls (5%)			
			Lakoma (5%)			
OvA	Ottumwa-Capa complex, 0 to 3 percent slopes	Slight	Ottumwa (55%)		72.9	5.1%
			Capa (35%)			
			Wendte (4%)			
			Kolls (3%)			
			Lakoma (3%)			
OwB	Ottumwa-Lakoma complex, 3 to 6 percent slopes	Slight	Ottumwa (60%)		108.2	7.6%
			Lakoma (30%)			
			Capa (4%)			
			Bullcreek (4%)			
			Kolls (2%)			
OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes	Moderate	Ottumwa (55%)	Surface kw times slope times R index (0.27)	78.3	5.5%
			Lakoma (35%)	Surface kw times slope times R index (0.27)		
OxC	Ottumwa-Razor silty clays, 6 to 9 percent slopes	Moderate	Ottumwa (50%)	Surface kw times slope times R index (0.27)	35.2	2.5%
			Midway (5%)	Surface kw times slope times R index (0.40)		
OyC	Ottumwa-Razor-Savo complex, 6 to 15 percent slopes	Moderate	Ottumwa (35%)	Surface kw times slope times R index (0.27)	7.0	0.5%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Razor (30%)	Surface kw times slope times R index (0.18)		
			Savo (25%)	Surface kw times slope times R index (0.16)		
			Midway (5%)	Surface kw times slope times R index (0.40)		
RbD	Razor-Midway complex, 6 to 15 percent slopes	Moderate	Razor (55%)	Surface kw times slope times R index (0.25)	13.2	0.9%
			Midway (30%)	Surface kw times slope times R index (0.40)		
			Savo (8%)	Surface kw times slope times R index (0.16)		
			Ottumwa (7%)	Surface kw times slope times R index (0.27)		
SrA	Savo silt loam, 0 to 2 percent slopes	Slight	Savo (90%)		12.5	0.9%
			Ottumwa (5%)			
			Wortman (4%)			
			Hoven (1%)			
SrB	Savo silt loam, 2 to 6 percent slopes	Slight	Savo (90%)		64.6	4.6%
			Ottumwa (5%)			
			Wortman (4%)			
			Hoven (1%)			
W	Water	Not rated	Water (100%)		0.3	0.0%
Wd	Wendte-Herdcamp silty clays, channeled	Slight	Wendte (55%)		10.2	0.7%
			Herdcamp (30%)			
			Bullcreek (5%)			
			Egas (5%)			
			Nimbro, channeled (5%)			
<b>Totals for Area of Interest</b>					<b>1,419.6</b>	<b>100.0%</b>

Rating	Acres in AOI	Percent of AOI
Slight	1,269.3	89.4%
Moderate	149.9	10.6%
Null or Not Rated	0.3	0.0%
<b>Totals for Area of Interest</b>	<b>1,419.6</b>	<b>100.0%</b>

**Rating Options—Erosion Hazard (Off-Road, Off-Trail)**

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

## Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

## Soil Erosion

This folder contains a collection of tabular reports that present soil erosion factors and groupings. The reports (tables) include all selected map units and components for each map unit. Soil erosion factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

## RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factor Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the mineral surface horizon. Missing surface data may indicate the presence of an organic layer.

### Report—RUSLE2 Related Attributes

Soil properties and interpretations for erosion runoff calculations. The surface mineral horizon properties are displayed or the first mineral horizon below an organic surface horizon. Organic horizons are not displayed.

RUSLE2 Related Attributes—Haakon County, South Dakota								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
BkB—Blackpipe silty clay loam, 2 to 6 percent slopes								
Blackpipe	85	—	C	.32	3	17.4	52.6	30.0
Bu—Bullcreek clay, 0 to 6 percent slopes								
Bullcreek	85	200	D	.37	5	5.0	38.0	57.0

Custom Soil Resource Report

RUSLE2 Related Attributes—Haakon County, South Dakota								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
CbA—Capa silt loam, 0 to 6 percent slopes								
Capa	90	298	D	.49	2	25.0	52.0	23.0
Ct—Capa-Wendte, channeled, complex								
Capa	50	—	D	.49	2	26.5	53.5	20.0
Wendte	35	—	C	.37	5	5.3	44.7	50.0
Eg—Egas silty clay loam								
Egas	85	—	C/D	.24	5	18.5	44.0	37.5
Hv—Hoven silt loam								
Hoven	90	—	D	.43	2	21.3	54.7	24.0
KeA—Kirley clay loam, 0 to 3 percent slopes								
Kirley	90	200	C	.24	5	34.0	37.0	29.0
KeC—Kirley clay loam, 6 to 9 percent slopes								
Kirley	85	141	C	.24	5	34.0	37.0	29.0
KhB—Kirley-Mosher complex, 0 to 6 percent slopes								
Kirley	60	200	C	.24	5	34.0	36.0	30.0
Mosher	30	200	D	.43	2	22.0	56.0	22.0
KmB—Kirley-Ottumwa complex, 3 to 6 percent slopes								
Kirley	45	180	C	.24	5	34.0	36.0	30.0
Ottumwa	35	161	D	.37	4	10.0	45.0	45.0
KmC—Kirley-Ottumwa complex, 6 to 9 percent slopes								
Kirley	45	141	C	.24	5	34.0	36.0	30.0
Ottumwa	35	131	D	.37	4	10.0	45.0	45.0
Ko—Kolls clay								
Kolls	90	98	D	.37	5	2.0	38.0	60.0
LaC—Lakoma silty clay, 6 to 9 percent slopes								
Lakoma	85	128	D	.37	3	5.0	42.0	53.0
LaD—Lakoma silty clay, 6 to 15 percent slopes								
Lakoma	85	128	D	.37	3	5.0	47.0	48.0
Lp—Lohmiller silty clay, channeled								
Lohmiller, channeled	90	—	C	.24	5	7.2	47.8	45.0

Custom Soil Resource Report

RUSLE2 Related Attributes—Haakon County, South Dakota								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
Lv—Lohmiller-Arvada complex								
Lohmiller	55	—	C	.20	5	7.2	47.8	45.0
Arvada	35	—	D	.49	2	26.3	52.7	21.0
Mo—Mosher silt loam, 0 to 3 percent slopes								
Mosher	80	200	D	.43	2	22.0	56.0	22.0
MyE—Midway silty clay loam, 9 to 35 percent slopes								
Midway	85	49	D	.32	2	12.0	53.0	35.0
OtA—Ottumwa silty clay, 0 to 3 percent slopes								
Ottumwa	85	—	C	.37	5	5.0	42.0	53.0
OtB—Ottumwa silty clay, 3 to 6 percent slopes								
Ottumwa	85	—	C	.37	5	5.0	42.0	53.0
OvA—Ottumwa-Capa complex, 0 to 3 percent slopes								
Ottumwa	55	—	C	.37	5	5.0	42.0	53.0
Capa	35	—	D	.49	2	26.5	53.5	20.0
OwB—Ottumwa-Lakoma complex, 3 to 6 percent slopes								
Ottumwa	60	180	D	.37	4	22.0	28.0	50.0
Lakoma	30	180	D	.37	3	5.0	42.0	53.0
OwC—Ottumwa-Lakoma silty clays, 6 to 9 percent slopes								
Ottumwa	55	131	D	.37	4	22.0	28.0	50.0
Lakoma	35	131	D	.37	3	5.0	42.0	53.0
OxC—Ottumwa-Razor silty clays, 6 to 9 percent slopes								
Ottumwa	50	—	C	.37	5	5.0	42.0	53.0
Razor	35	—	D	.24	3	7.2	47.8	45.0
OyC—Ottumwa-Razor-Savo complex, 6 to 15 percent slopes								
Ottumwa	35	—	C	.37	5	5.0	42.0	53.0
Razor	30	—	D	.24	3	7.2	47.8	45.0
Savo	25	—	C	.32	5	21.9	55.1	23.0
RbD—Razor-Midway complex, 6 to 15 percent slopes								
Razor	55	—	D	.24	3	7.2	47.8	45.0
Midway	30	—	D	.32	2	16.9	48.1	35.0

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RUSLE2 Related Attributes—Haakon County, South Dakota								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
SrA—Savo silt loam, 0 to 2 percent slopes								
Savo	90	—	C	.37	5	21.9	55.1	23.0
SrB—Savo silt loam, 2 to 6 percent slopes								
Savo	90	—	C	.37	5	21.9	55.1	23.0
Wd—Wendte-Herdcamp silty clays, channeled								
Wendte	55	—	C	.37	5	5.3	44.7	50.0
Herdcamp	30	—	C/D	.28	5	5.5	47.0	47.5

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